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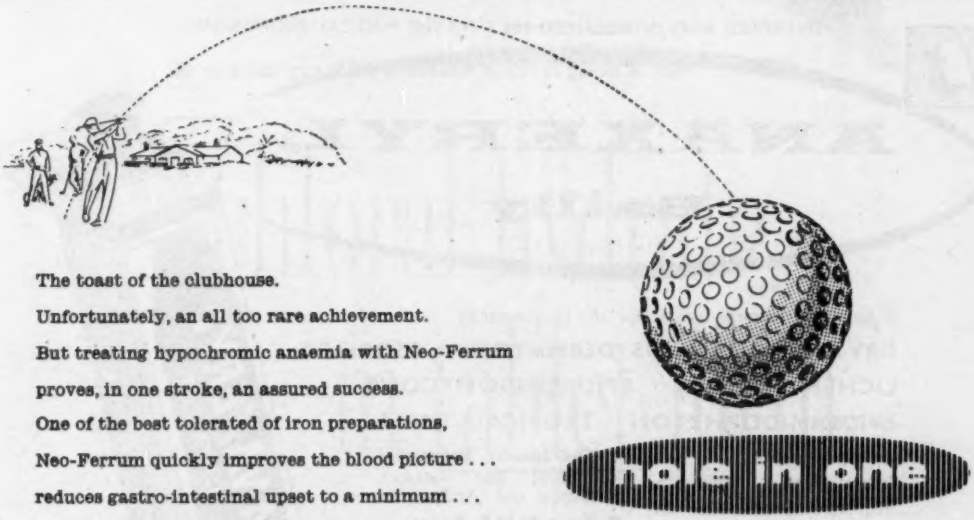

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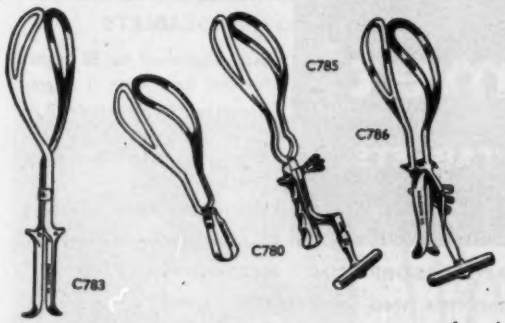

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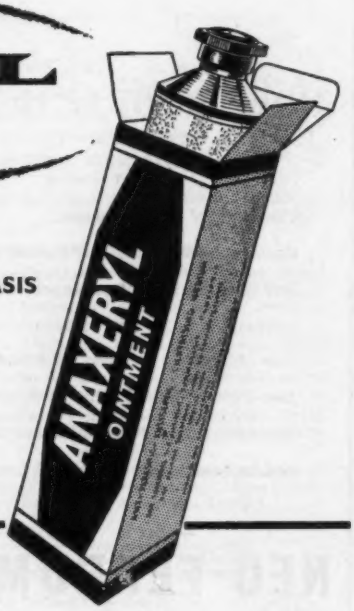

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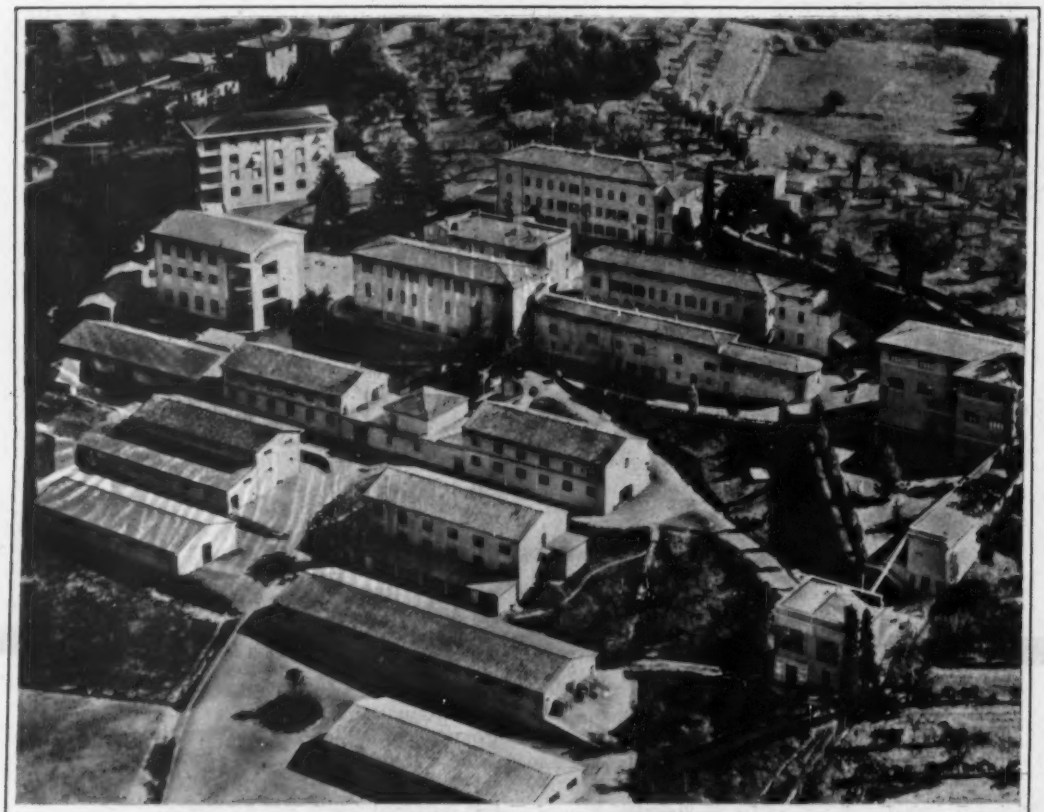

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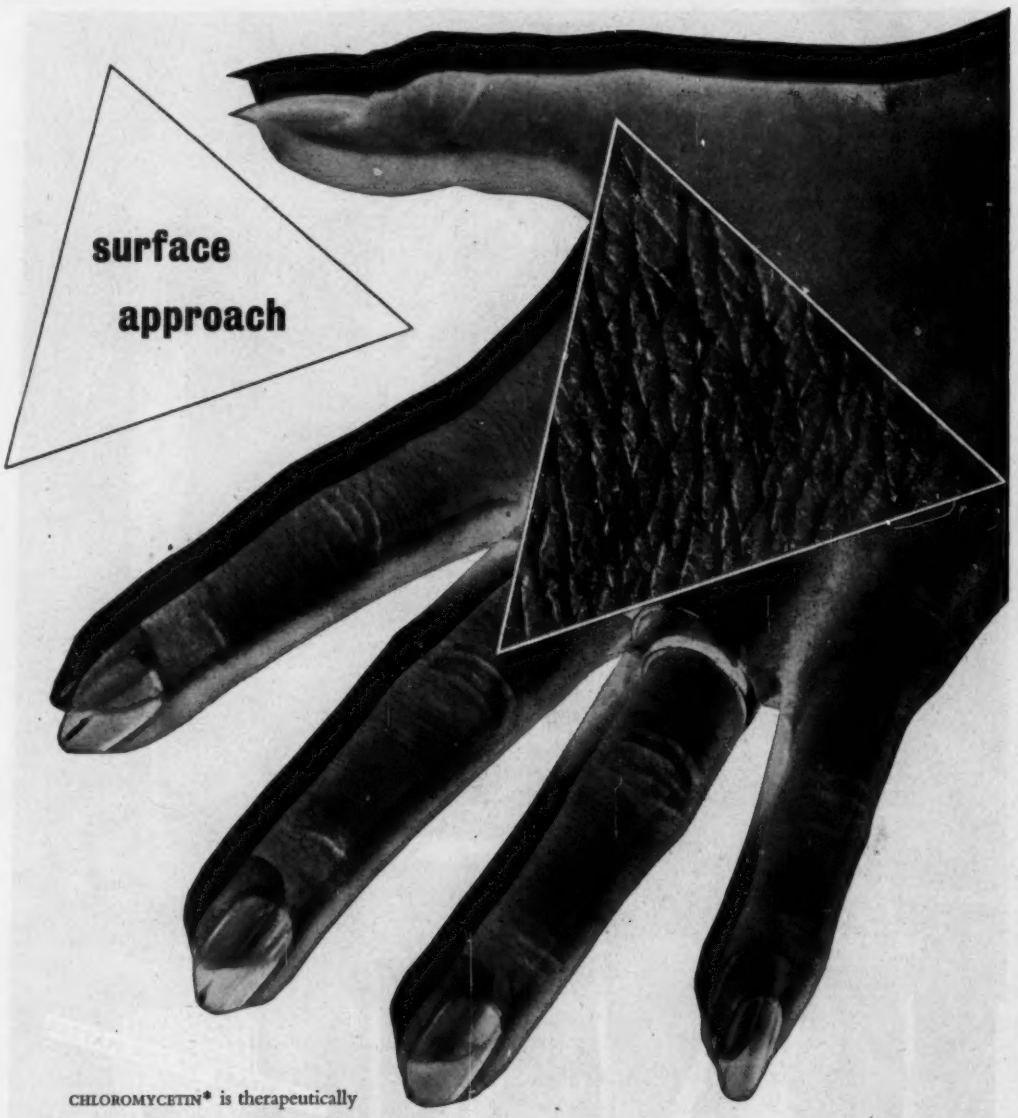

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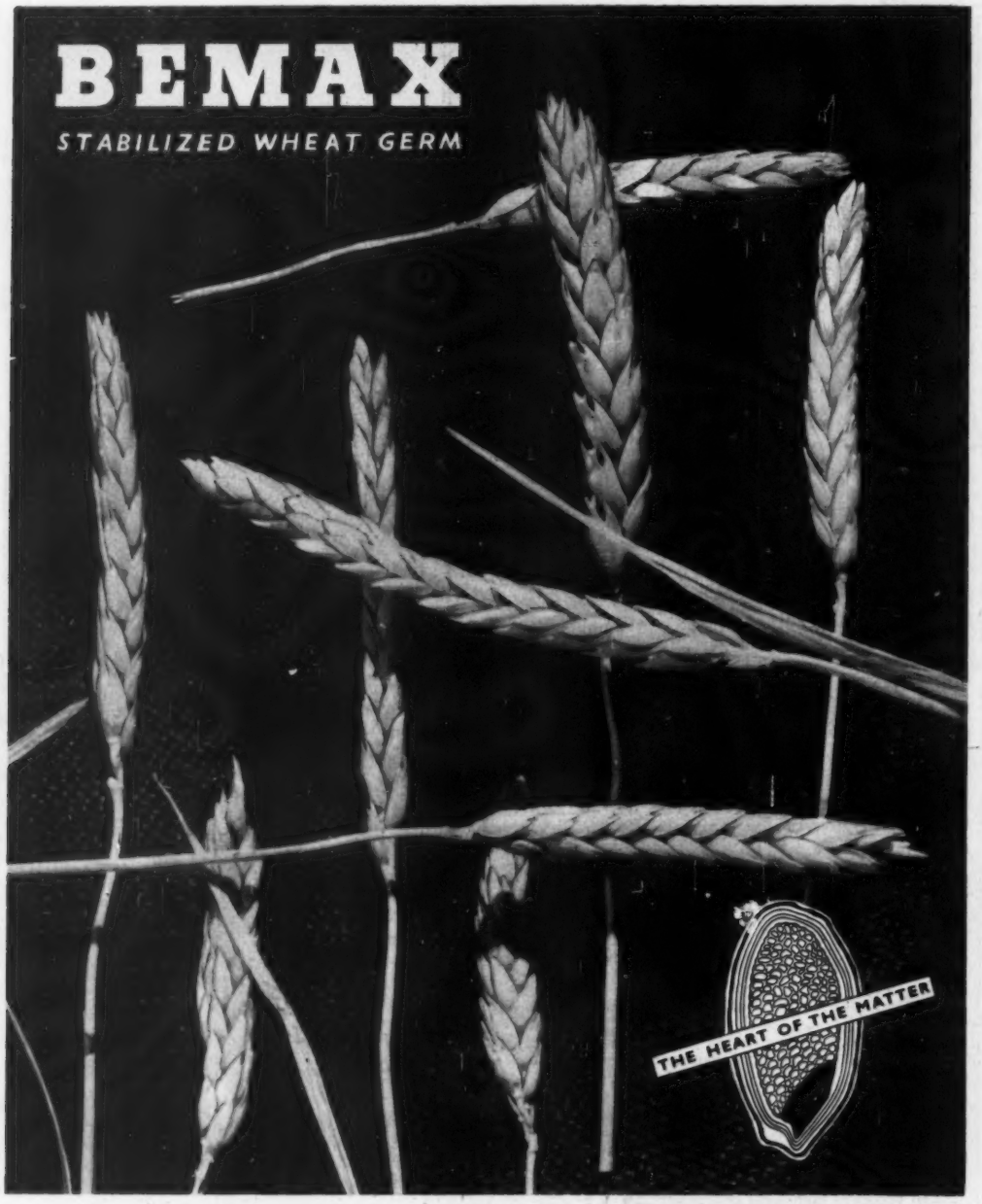

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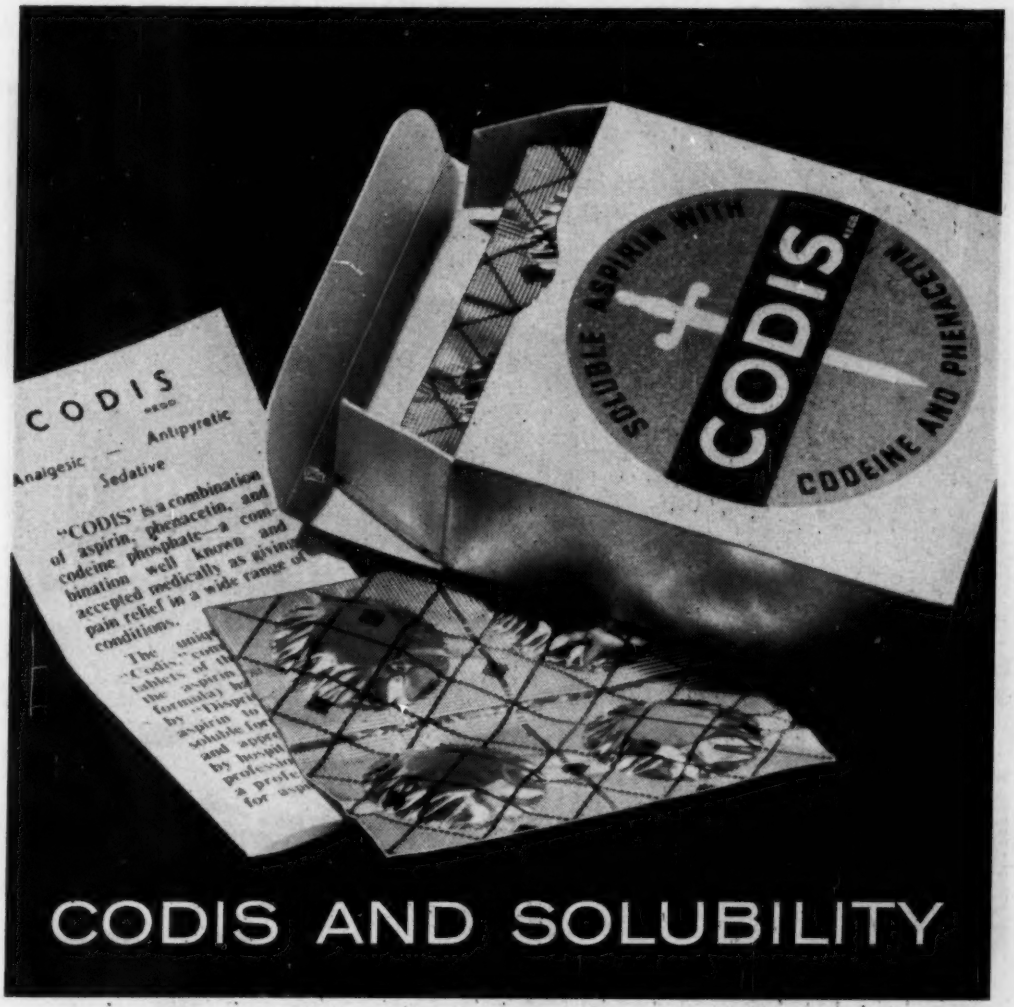

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This is achieved by careful compounding and preparation, resulting in tablets which are quickly absorbed and well tolerated—even in cases of proven intolerance to ordinary (insoluble) aspirin.

To ensure stability and easy identification, the tablets are wrapped in moisture-proof distinctive gold foils of 10 tablets each (dispensing size), or boxes containing five foils of 4 tablets each (public size).

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NEW
FOR THE DOCTOR WHO NEEDS SOMETHING BETTER...
A NEW EASY-TO-REMEMBER NAME
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FERROIDS
'Ferroids' are different. They contain iron aminoates, a compound of unusual interest formed by chelating iron with amino acids. 'Ferroids' ensure the best possible therapeutic results because of the high utilisation of iron without gastro-intestinal upset.
COMPOSITION
Each golden yellow tablet contains:
Iron Aminoates 350 mg.
Aneurine Hydrochloride 1 mg.
PACKS
Bottles of 100
Bottles of 1,000
Basic Cost to N.H.S.
6/8d. and 54/8d.
DOSE: 1 or 2 tablets three or four times a day.
Send for literature and samples.
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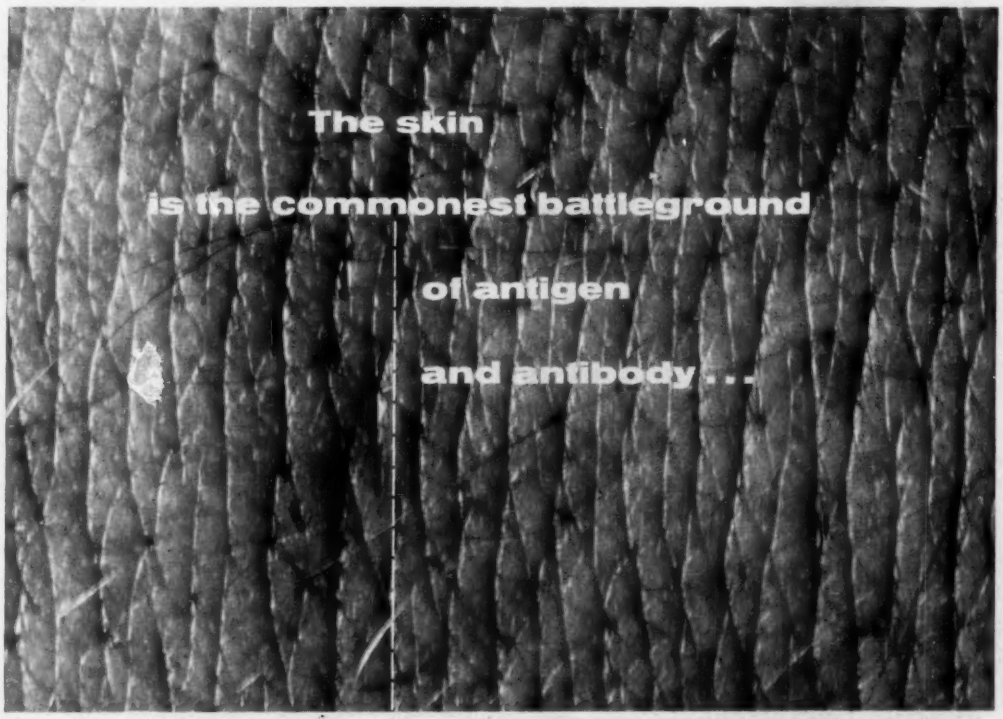

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0.579 g. calcium lactate
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anti-allergic
anti-pruritic

Samples upon request

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PROMOTING

—a return of appetite

—an increase in weight

—a sense of well-being

with Anabolex, the protein-anabolizing, non-virilizing steroid

PATIENTS who are run down or who are recovering from illness frequently suffer from faulty protein metabolism. They are in negative nitrogen balance. Protein, in effect, is being broken down and lost faster than it is being built up.

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Middle-aged or elderly people who are debilitated or "run down."

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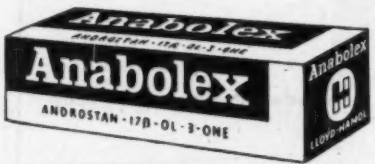
PRESENTATION: In vials of 25 and 100 tablets, each tablet containing 25 mg. Androstanolone. Anabolex can be prescribed on Form E.C. 10. Basic N.H.S. price 20/- and 70/-.



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15

XII

Old

Belladonna Alkaloids

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IX III

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oral depot tablets

for

round the clock

spasmolysis

VI

formula: atropine sulph. (0.05 mg.), hyoscyamine sulph. (0.35 mg.), and hyoscine hydrobrom. (0.025 mg.), in optimal proportions plus amylobarbitone (65 mg.); all bonded to ion-exchange resins.

advantages: slow release of active ingredients, 12-hour optimal blood levels, greatly diminished side effects, convenient night and morning dosage, economy.

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dosage: ½—2 tablets morning and night. **Basic N.H.S. cost:** 5/- for 30 tablets.

First in the field of oral depot therapy — CPL

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It is a fact* that 77% of all diabetics are overweight. Also established is the fact† that reduction in weight leads to a proportional lowering of the blood sugar level. Should no attempt be made to reduce their weight to a normal average level (weight at the age of 30 is suggested as the ideal) there is, over the years, a higher incidence of complications. In addition, higher amounts of insulin must be administered‡.

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*L'Union Medicale du Canada June 1957
†The Annals of Internal Medicine July to December 1942
‡Canadian Medical Association Journal 76,938/40. 1957

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ACHROMYCIN* V Syrup

TETRACYCLINE WITH SODIUM METAPHOSPHATE

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accelerates the recovery

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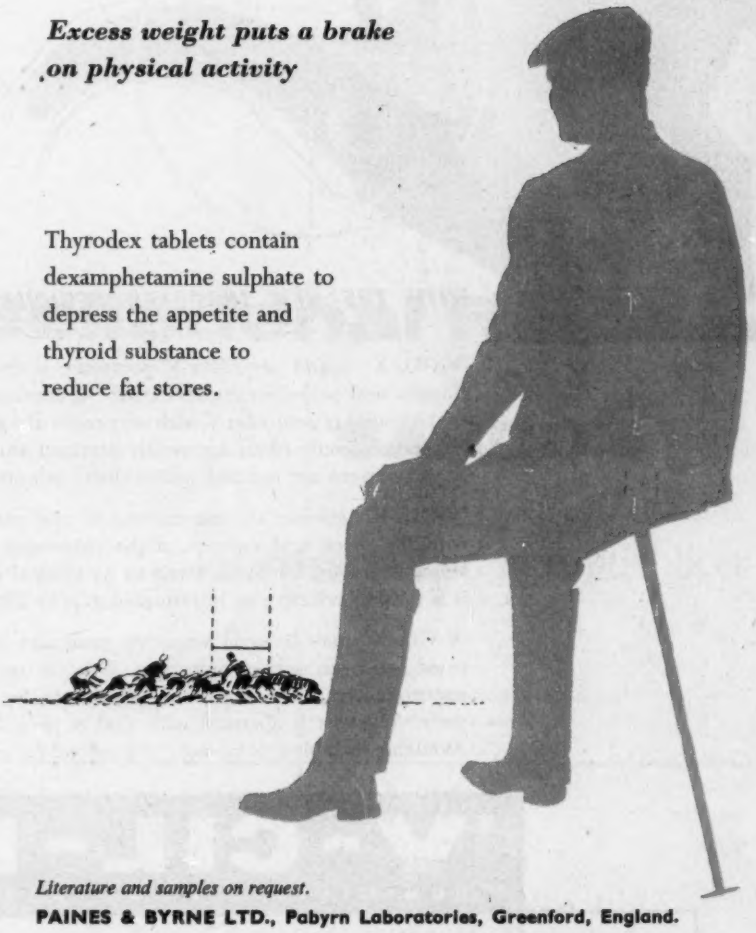
Thyrodex tablets contain dexamphetamine sulphate to depress the appetite and thyroid substance to reduce fat stores.



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surely...
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WITH THE NEW IMPROVED PENICILLIN-V

'V-CIL-K' brand penicillin V potassium is the most efficient oral penicillin yet developed. It combines the acid stability of penicillin V with very rapid absorption. High therapeutic levels are swiftly attained and peak concentrations are reached within thirty minutes.

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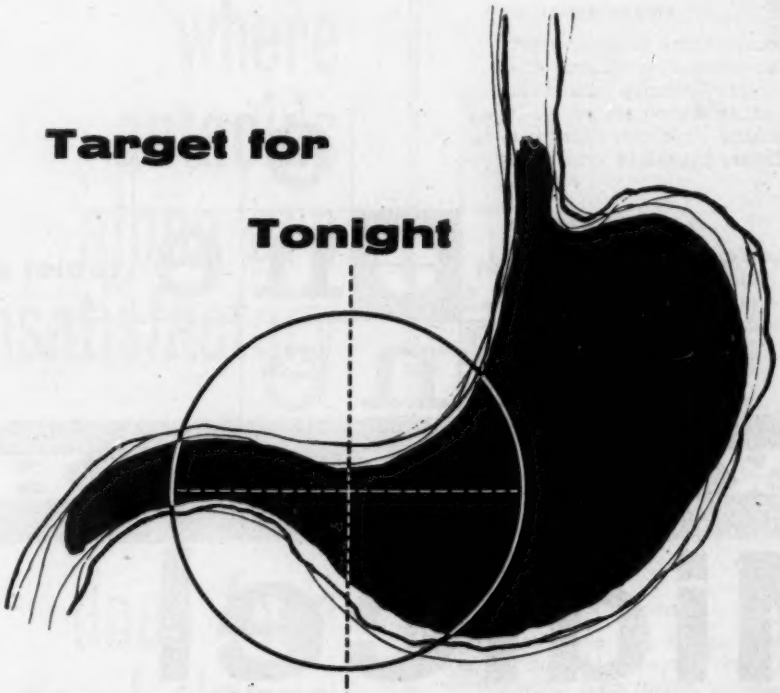

Belladenal Retard

BY **SANDOZ**

for **night** pain in peptic ulcer

TABLETS
0.25 mg. total alkaloids of belladonna
50 mg. Phenobarbitone B.P.

Sandoz Products Limited

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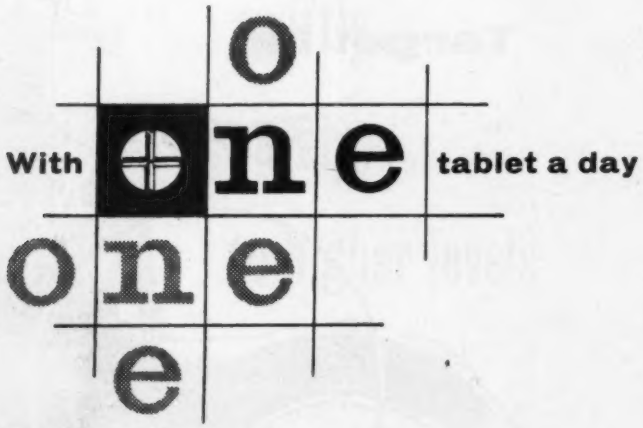

Midicel

SULPHAMETHOXYPYRIDAZINE

sustained sulphonamide blood-level

prolonged therapeutic effect

The new 'prolonged-action' sulphonamide, MIDICEL*, maintains full therapeutic effect with only one tablet daily. Thus, the patient's comfort and convenience are enhanced and nursing care is simplified.

Comparable in price with other sulphonamides MIDICEL provides added advantage without added cost.

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Packaging: Tablets of 0.5 G in containers of 12, 100 and 250.

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where antacids alone are unsatisfactory

RELIEVES SPASM

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REDUCES ACIDITY

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KOLANTYL

does four good things in the relief of peptic ulceration

PROTECTS MUCOSA

3. Methylcellulose, a demulcent, is included to protect the damaged mucosa from further irritation by the gastric contents.

INHIBITS EXCESS ENZYME ACTION

4. Sodium lauryl sulphate inhibits the proteolytic enzymes lysozyme and pepsin. Excess lysozyme is frequently present in the vicinity of a peptic ulcer.

Merrell Research

'Kolantyl' is available as tablets and gel. Each tablet or 10 c.c. of gel contains:

Dried Aluminium Hydroxide Gel	400 *mg.*
Magnesium Oxide	200 *mg.*
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Methylcellulose	100 *mg.*
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PACKS:

Convenient rolls of 12 tablets in cartons of four or twenty rolls. 'Kolantyl' Gel in bottles of 12 fl. oz.

DOSAGE:

2 tablets or 4 teaspoonfuls of gel three or four times daily. The basic N.H.S. costs are 5s. and 23s. 4d.; of the gel, 6s. 4d. Purchase Tax additional.

'Kolantyl' and 'Merbentyl' are registered trade marks of the Wm. S. Merrell Company.

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Further information and literature available to the medical profession on request.

REFERENCES

Brit. Med. Jnl. (1955), **1**. 1238 Lancet (1955), **268**.181
Med. Proc. (1956), **2**. 198 Brit. Jnl. Anæs. (1956), **28**. 325
Med. Jnl. Aust. (1957), **10**. 355

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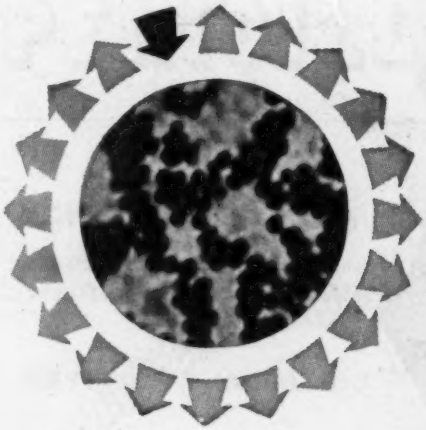

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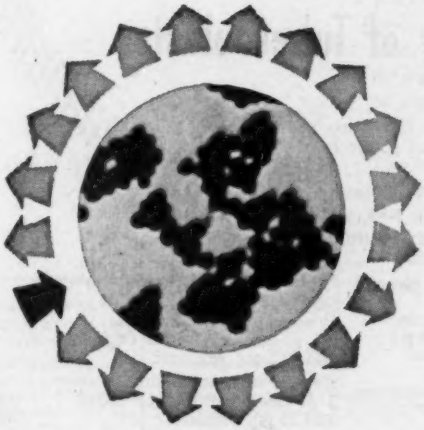
Supplies: tablets, each containing 250 mg. spiramycin base.



'Rovamycin'
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Calcium B-PAS WANDER

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B-PAS (Wander), 4-benzoylamino-2-hydroxybenzoic acid, first introduced by our Research Laboratories in 1948, is the drug of choice in regimens comprising PAS in concurrent therapy.

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Available in 3.5 g. envelopes and in 1 g. cachets; and as bulk powder.

'B-PASINAH' is available in two convenient forms:

Powders each containing 3.5 g. calcium B-PAS (Wander) and 87.5 mg. isoniazid.

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Full abstracts from literature, also details of institutional packs and prices from the Medical Department

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PENICILLIN G V V-K

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CRYSTAPEN INJECTION Even the newest oral penicillins have not displaced sodium penicillin G by injection as the treatment of choice for acute, overwhelming infections; there is still nothing better than Crystapen Injection for dealing the first decisive blow.

CRYSTAPEN TABLETS & LIQUID As tablets and liquid, Crystapen has become the foremost oral penicillin because of its reliability and low cost. Clinically as effective as any form of penicillin V, Crystapen is only about one third the cost. It plays by far the best supporting role to penicillin by injection.

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CRYSTAPEN V TABLETS The newest tablet penicillin. Using the potassium (K) salt of penicillin V, Crystapen V not only ensures effective blood levels more rapidly than penicillin V free-acid; it provides distinctly better therapeutic concentrations. However, dose for dose, the clinical effectiveness of Crystapen V is only about on a par with Crystapen.

CRYSTAPEN V LIQUID This is the new, short name for Penicillin V Oral Liquid Glaxo, the palatable ready-to-use suspension of the calcium salt of penicillin V. It is the most acceptable form of oral penicillin for children.

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(soluble sodium penicillin G) *Injection:* In strengths of 100,000 units to 10 mega units of sodium penicillin G.	(soluble potassium penicillin G) *Tablets:* 125 and 250 mg. *Liquid:* 125 mg. per fluid drachm.	(phenoxymethylpenicillin) *Tablets:* 125 and 250 mg	(potassium phenoxymethylpenicillin) *Tablets:* 125 and 250 mg	62.5 mg. penicillin V (as calcium salt) per fluid drachm.

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**Crystapen (trade mark) is available in most countries*

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BRAND OF AMISOMETRADINE

The NEW Searle Oral Diuretic

gives continuously effective diuresis

- on **simple b.i.d. dosage** • with absolutely **minimal gastric upset**
- without developing resistance to its action
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"Early in this study it became evident that amisometradine produced a significant diuresis in most patients with heart failure, and that gastro-intestinal intolerance was unusual."
(1958) *Brit. Med. J.*, **1**, 9.

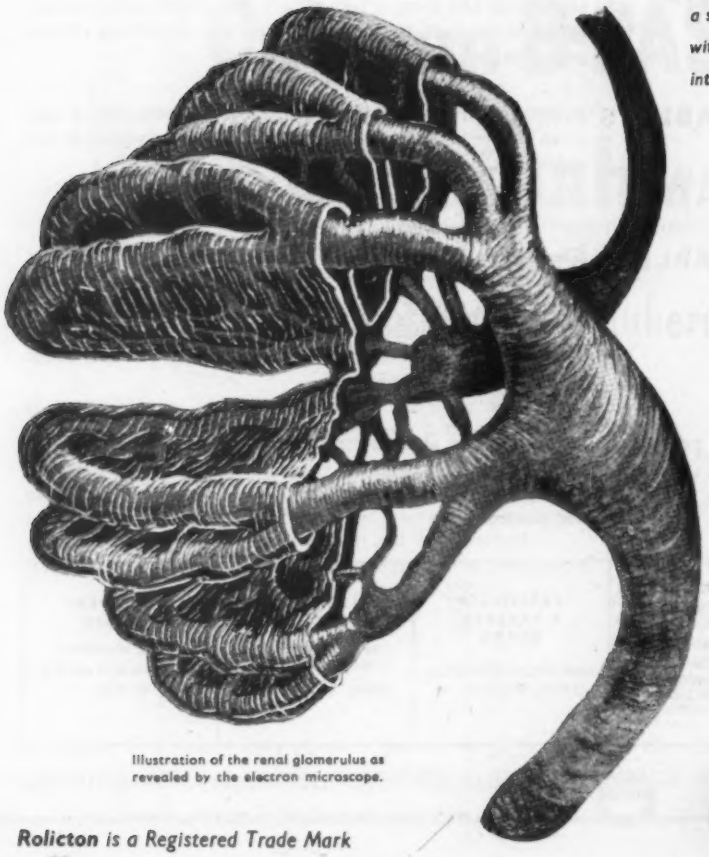

Illustration of the renal glomerulus as revealed by the electron microscope.

Available as 400 mg. tablets in bottles of 20, 100 and 500.

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TABLETS: (2·5 *mgm.) in bottles of* 25, 100 *and* 500
ELIXIR: (1 *mgm. per fluid drachm) in bottles of* 20 *fl. oz.*

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BRAND
TRIPROLIDINE HYDROCHLORIDE

Today's most potent antihistamine . . .
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For rapid absorption Chloromycetin* is unique among present-day antibiotics. Effective anti-bacterial levels at most sites of infection can readily be obtained by oral administration. As blood-levels may conveniently be adjusted to control any grade of infection, Chloromycetin therapy produces swift response, and the duration of treatment is, therefore, reduced. The completeness of absorption also lessens the possibility of gastro-intestinal upset.

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effective against many organisms resistant to other antibiotics.

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SOCIAL MEDICINE IN DEVELOPING COUNTRIES *

CICELY D. WILLIAMS
B.A., D.M. Oxon., F.R.C.P., D.T.M. & H.
FORMERLY ADVISER IN MATERNITY AND CHILD HEALTH, SOUTH EAST ASIA REGION, WORLD HEALTH ORGANISATION

SOME of the many definitions of Social Medicine imply that it deals chiefly with social pathology, with human beings in aggregates, and with statistical results. But social medicine has its clinical application as well as its pathology. It deals with individuals as well as with communities. (The hermit in the wilderness and Robinson Crusoe on his island have their social attributes and implications.) And there is much in human needs and experiences which cannot be expressed statistically.

The fact that too great a reliance on statistics may be misleading has been shown most plainly in the developing countries, where social medicine has a great deal to teach and to learn, though statistics are at present often unobtainable. Another lesson which work in these countries teaches us is the necessity, for social medicine, of a good follow-up service. It is the only means of ensuring that diagnosis is complete and accurate, that treatment is adequate, and that complications and sequelæ are prevented. Without it, money spent on medical services and medical researches may be squandered.

The Ivory Hospital

In Europe and North America hospitals are the core of the medical world. They started many centuries ago with high standards of what Milroy called "philanthropic benevolence" and they have grown into sanctuaries of scientific medicine. And yet there are complaints about them. Some say that the patients are submitted to a large number of investigations rather than to the individual care and human kindness which they need. No one person seems to be responsible for the patient as a whole. Often the teaching of students is almost entirely divorced from the realities of the circumstances in which the patient became ill and to which he will return on leaving hospital.[1] Medical students and nurses during their training see mainly the institutional side of medicine: they are largely unaware of the public-health services and of the social sciences. In some hospitals the duty of the medical team is felt to be the application of the natural sciences; and the almoner, as an exponent of the social sciences, is excluded from her place in it.

In some parts of the world medical services as a whole are backward. At first sight one may be struck by the good physique of the people; but it is usual to find that the expectation of life is short, and mortality among children high. The sick or sorry are not the ones to be seen swinging along the roads or laughing together in the market-place. In other countries the medical services are uneven. Hospitals may be found with the most modern equipment, and the most expert methods of treatment and research, while in other parts of the same town people live in squalor and disease, getting no advantage whatever from scientific medicine.

In most of these countries the indigenous forms of medicine are by no means scientific. In some all forms of ill health are ascribed to the malevolence of witches or to the machinations of enemies. Prevention of accidents and treatment of disease generally include some sort of magical ritual. At the same time these systems of medicine may employ some extremely useful drugs, and some highly expert forms of massage and manipulation. They nearly all include a close personal faith in the individual practitioner, and a sympathetic understanding of the troubles of the patient.

Pill and Injection

In many regions scientific, or Western, medicine was first introduced as medical care for the expatriate European population. Attention was focused on the major epidemic diseases, such as plague, cholera, and smallpox, which involve risks to all, and whose control requires both treatment and preventive organisation. In the emergency of an epidemic the population must be dragooned into compliance with regulations, and there is little opportunity to employ the arts of education, persuasion, and the finer points of social medicine.

As conditions improve and these major epidemics are forgotten, attention turns to endemic diseases, such as malaria, yaws, leprosy, and filariasis. Of late there has been vast improvement in the techniques for dealing with these conditions and a great many mass campaigns have been launched. The basis of these campaigns is usually to devise measures that demand from the population passive acceptance rather than active cooperation. People have been urged:

> "Let us spray your house, this will prevent malaria."
> "Let us give you an injection, this will cure your syphilis and your yaws."
> "Let us inoculate you, this will protect you from tuberculosis."

This type of campaign has had a great deal of success. It is easy to get some statistical measure of the work accomplished, which pleases the administrators. Not much effort is required from the recipients, which pleases them. And those who conduct the campaigns have a sense of achievement. The techniques need not vary greatly from country to country, so that little local knowledge is needed. The auxiliary staff are recruited locally, and when they have mastered a few simple techniques they become valuable assistants.

Sometimes these campaigns stimulate not only the control of a particular disease, but also other functions of the medical service. Within a short time they may show significant results by lowering mortality and morbidity and by increasing production. The campaigns may then become a spearhead for further improvements. But they have a negative side which should not be overlooked. They may prove costly in money and in personnel; the improvement in health may be only temporary unless campaign to control the disease is followed by continued endeavour; and the lowering of mortality may lead to an embarrassing increase in population. Thus health measures may be effective and yet not improve standards of living, education, or responsibility. The greatest danger is that people may get the impression that good health may be achieved by a pill or an injection. They do not associate improvements

* Abridged from the Milroy lectures for 1958, delivered before the Royal College of Physicians of London on Feb. 4 and 6.

1. Grundy, F., Mackintosh, J. M. *Wld Hlth Monograph* no. 34, 1957.

with their own responsibilities or with alterations in personal and community behaviour.

Even though malaria has been controlled and yaws eliminated, there will still be a great deal of ill health and inefficiency. The population continues to demand (and the medical department attempts to supply) anti-malarial drugs for every fever, and penicillin for every other disorder. The community which demands pills and injections for every discomfort, but has not been led to take an interest in improving living conditions or food habits, is sometimes more difficult to reform than one which ascribes all illness to spells and incantations.

One of the results of this attitude of mind may be a pressing but irrational demand for more medical services, a demand for quantity without any respect to quality. The people insist on new dispensaries at C and D, while the dispensaries at A and B are allowed to fall into disrepair, before there are enough trained staff for either. A new hospital is deemed to give prestige though the staff is so inadequately trained and supervised that it can scarcely be medically beneficial. Men, and to a lesser extent women, attend as outpatients for trivial complaints, invariably asking for a bottle of medicine or an injection. In a country that still has a great deal of ill health, a multiplicity of second-rate or third-rate medical establishments is a serious hazard to a constructive health policy.

Responsible administrators are apt to develop a cynical attitude towards the medical department. "The demand for hospitals is so great that I feel we are teaching the Africans to become a nation of hypochondriacs" was a comment on one area where scarcely half the children survive to maturity. Can anyone really believe that it is hypochondria that kills half the children? Or has medicine failed to justify itself? Is bad medicine driving out good?

Diseases and Patients

The Western type of medicine is by no means always acceptable. Many people still prefer the indigenous or non-scientific medical practices, largely because they are more sympathetic and perhaps only a little less efficient. They only turn to Western doctors when they are desperate, or as a method of appeasing another powerful *mana*. Their attitude towards hospitals and medical advice may remain entirely different from that of people who have grown up in contact with the resources of scientific medicine.

All over the developing countries new schools and colleges of medicine are being set up which are based on scientific or Western teaching. Yet one of the weaknesses of medical training in Europe is its neglect of the social sciences and of the social factors that affect the life and health of patients. These overseas schools and colleges are too often dependent on the doctors trained in this European pattern. If they are out of touch with social factors in their own countries, how much more is this not true in the countries of their adoption?

Some European doctors who go overseas make the most of their opportunities to learn the local patterns of living and of ideas. The missions, for instance, aim at a continuity of staff which provides time and opportunity to learn the languages and get to know the people and their problems. But in many of the Government and university posts this sort of continuity is not regarded as essential or even desirable.

In recent years there has been a great increase in international travel. Doctors from Europe and North America have visited hospitals and universities overseas. They often mention with satisfaction the operating-theatres, laboratories, libraries, and pathological museums. They rarely refer to the record-keeping, the patients' food, the casualty department, or follow-up service. Sometimes they do not mention pædiatrics. It is natural, therefore, that insufficient attention may have been paid to these matters.

The result is that while European medicine has been focused on institutions, medicine in developing countries has been largely focused on diseases. Once a condition is recognised as being prevalent, it is labelled as "a public-health problem", and approached by mass methods. But mass surveys, mass treatment, mass feeding programmes, mass health education, and environmental sanitation are expensive and not always appropriate. They cannot take the place of individual care, and of consistent and careful observation. The old narrow view that by using specific techniques and curing specific diseases we would all achieve health has proved wrong. It is a mistake to look only for mechanical answers to what are mainly human problems.

Dangers of Specialisation

It is increasingly realised that the human being must be treated as a whole, and the family as a unit. To disregard man in his environment or to ignore the importance of his place in the community or within the family is to invite complications. Yet, with the rapid development of the biophysical sciences, medicine is more and more divided into highly specialised techniques. Some of the specialisations lead to rapid advances in research, but some are shortlived and have only a limited contribution to make.

The more a subject becomes specialised, the more it tends to pursue its own aggrandisement and perpetuation—sometimes irrespective of the general needs of the community, and the general resources of medical care. Each procedure demands from the patient fresh personal contacts which are in themselves exhausting. Records have to be multiplied—collaboration becomes time-consuming. But the real danger arises when the narrow specialties try to direct policy and exclude the consideration of other important philosophies.

In medicine the multiplication of workers has tended to separate the scientific from the social disciplines and preventive from curative medicine. In this country we have a large, expensive, and elaborate medical organisation which has been remarkably successful in dealing with disease, disability, and incompetence; but it is based on strong historical traditions, on a highly industrialised society, established law and order, and on an acceptance of social responsibility. If they go overseas, doctors and nurses who have trained in this country, may find it hard to adapt themselves to new conditions where the pattern of medical care is simpler and where they must be prepared to deal with large numbers of very common diseases. The true need of the developing countries is for medical services with a broad outlook that will have curative, preventive, and social functions. Too much specialisation is expensive and inappropriate. Experience has shown that specialisation in certain diseases often leads to the neglect of others.

At the administrative level, too, there is still an inclination to call in a new specialist for every problem. If health education is needed, then a "health educator" is employed. If malnutrition is recognised, then a "nutrition worker" is thought to be necessary. Yet these experts may have little or no clinical training, and are

often not qualified to give health education or nutritional treatment to individual patients. It is said that the doctors and nurses are not trained, or not interested in, or have no time for these things. If so, it is preferable to employ more doctors and nurses and to give them better training. The health educator and the nutrition worker may indeed be of service at the community level, but doctors and nurses should remain responsible for clinical diagnosis and management.

In some places where the medical services are accepted only reluctantly a social anthropologist is called in to investigate and analyse popular resistance. Many of the observations made by the social anthropologists could well have been reported by the doctors and health nurses working in the area, if ever they had been encouraged to do so. Doctors and nurses have a great advantage over the research-worker, who is often only able to define the status of a population with respect to resources and conventions. A medical staff, who have gained the confidence of the people among whom they work and live, can also observe the dynamics. They can observe the response to improved health, the reaction to changing opportunities, and the variations with which individuals and families adapt their behaviour to new concepts.

Many social workers from overseas come to train in Europe. Commonly they go home with the idea that an expensive pattern of social security is of the highest priority. They may feel that institutions should be provided for delinquent, neglected, and handicapped children. But in the United Kingdom over 60% of the children who have to be taken under care are derelict because of some problem in health, and in countries where disease is far more prevalent than here a very much larger proportion of so-called social problems are in fact due to ill health or neglected health. In most primitive societies there is a tradition of kinship and family responsibility, and it is more important to build on this than to provide institutions.

The progress of medicine in the developing countries must in fact depend largely on its social content. Too much specialisation has led to the separation of clinical and social work, but expanded medical services would lead to the prevention of social complications and disasters.

Custom and Nutrition

Nutrition is closely bound up not only with economics and geography but also with social *mores*. Too often nutritional diseases are attributed to an absence of food, and the fact that the nutritional state is the end-product of dietetic, infective, parasitic, psychological, and even purely social factors is overlooked.

Wherever malnutrition exists, it is always the children who suffer most. Because medicine in the developing countries has given so little attention to the children the existence and the gravity of malnutrition has been overlooked for too long.

A number of surveys have been made, but they are of limited value. They often concentrate on schoolchildren, an age-group which is relatively healthy. Though they record the stigmata of chronic or past malnutrition they rarely include the acute case. Few data are given about the factors that have led to the condition.

In some places true food shortage exists. Sometimes this shortage is permanent, but in many places it is seasonal. It may be due to poor storage facilities. It is sometimes due to improvidence. The people know how to make biltong and pemmican, but custom demands that when game is killed in hunting, or when cattle are killed for a celebration, these should be eaten in vast quantities. They know how to store their grain, and how to preserve green food for the dry season, but it is not done. It is social custom which demands enormous feasting on certain occasions, but which tolerates near-starvation between whiles. This is a pattern of behaviour which adults appear to enjoy but which has a serious effect on young children.

Sometimes irrational religious or traditional sanctions are associated with food. Eggs, for instance, which are known to be nutritious and digestible, and very useful in feeding young children, are almost universally avoided. Strict vegetarians, such as Hindus, will not use them. The Malays say they produce worms; in some parts of Africa they are said to induce sterility, in others they are credited with causing baldness, and in others again they are said to make the child into a thief. In some places they are simply regarded as tasteless and useless except for sale to Europeans.

Not only is the choice of food at fault. Sometimes it is the preparation, presentation, and timing. Good cereals may be used, but they are insufficiently ground, pounded, winnowed and cooked, so that they are indigestible. Enormous quantities may be given at one meal, and sheer distension may impede digestion and absorption.

In some parts of the world children are given food that is so highly seasoned with pepper that its effect on the mucosa must be excoriating. I am often told "But he is used to it", but nobody can say how many children have died in the process of "getting used to it".

In all the countries where malnutrition is common it will be found that there is much dyspepsia and gastro-enteritis among the children. The dyspepsia often passes unnoticed, because the parents regard gross abdominal distension and pain as normal in children at weaning. The same may be true of attacks of diarrhœa and enteritis. It is often hard to get adequate laboratory diagnosis, but some of these cases of diarrhœa are due in fact to the physical properties of the food which cause irritation. This may, of course, render the intestines more liable to invasion by pathogens.

There is still much uncertainty about the effect of helminths. Heavy infection with the ancylostome is known to produce anæmia. Some claim that Negroes have a considerable racial resistance to hookworm.[2] This is difficult to believe. I wonder whether it will not prove on closer observation that many people have an acquired immunity towards helminths. Those who have had mild infection in their early years may therefore show greater immunity in later life.

Roundworms are sometimes said to be harmful only when they are present in large numbers. I have myself seen serious complications due to roundworms. But I believe that when one can observe children over long periods it will be found that the presence of one or two ascaris in the intestinal tract of a young child may interfere with digestion and absorption to a degree that may seriously affect the nutritional state.

Sometimes the distribution of the food within the family is at fault. Sometimes the nutritional state is poor because of other disorders, among which may be conditions as diverse as tuberculosis, scabies, and maternal deprivation.

A great deal of trouble and money is now being spent on increasing food-supplies. The distribution of supplementary foods is being organised. But the provision of supplementary foods is symptomatic, not ætiological, treatment. It does not in itself teach parents how to care for their children, or how to select or prepare their food, nor yet does it treat or prevent recurrent attacks of dyspepsia, diarrhœa, or helminthiasis. It is personal advice and encouragement from someone who has won the confidence of the patient that is the most potent source of education.

2. Keller, A. E., Leathers, W. S., Ricks, H. C. *Amer. J. Hyg.* 1934, **19**, 629.

The most serious aspect of malnutrition in many places is not the absence of food, but that the doctors and medical auxiliaries have not been sufficiently trained to diagnose nutritional diseases, more especially in the early stages when they are still eminently treatable.

There is lack of hospital facilities for children with malnutrition. Even where there are beds for children, diagnosis and treatment is sometimes inadequate and there is little attempt to educate the parents. Not enough is done to discover the basic causes behind the malnutrition, and the follow-up and continued supervision is poorly organised.

Protein deficiency is now looked on as a serious and widespread nutritional defect, and a great deal of international effort and money is being devoted to the supply of more proteins on a massive scale. I do not agree with Waterlow [3] when he says:

"The prevention and control of protein deficiency in man is limited by the lack of scientific knowledge, not only in agriculture but also in medicine and physiology".

For years we have known how to diagnose and prevent protein malnutrition, and how to cure all but the moribund patients. It is not scientific knowledge that is lacking: it is the will to organise the necessary services, and give adequate training to the necessary medical personnel.

Thousands of pounds are spent each year on high-level scientific conferences, on elaborate research, and on mass methods of feeding. But we fail to find methods of application and we fail to give help where help is needed. More attention to the social aspects of nutrition would ensure better diagnosis of the causes, better facilities for treatment, and better supervision to prevent recurrence.

(*To be concluded*)

ON THE FAT-MOBILISING ACTIVITY OF HUMAN URINE

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PREVIOUS studies on obese people (Kekwick and Pawan 1953, 1956, 1957) have shown that if the calorie content of the diet is kept constant, the rate of weight loss varies considerably with alterations in the composition of the diet (fig. 1). Evidence was also put forward to suggest that the decrease in body-weight could be accounted for by loss of body fat and water. It appeared that a mechanism existed for controlling the mobilisation of depot fat which must be sensitive to changes in the composition as well as the calorie content of the diet. Such a mechanism should be operating at its maximum during fasting, and if any hormonal agent were involved it should be detectable in the urine. Indeed Weil and Stetten (1947) had already shown the presence of a fat-mobilising substance in the urine of fasting rabbits.

It was decided therefore to study the effect on fat metabolism of urine collected from healthy people during periods of fasting. For comparison, urine was obtained from the same subjects when taking a normal mixed diet. Batches of urine were collected and extracted in an identical manner. The extracts were injected into mice, which were used as the experimental animals throughout.

Method of Extraction

Subjects were fasted for 36 hours, urine being collected during the last 24 hours of this period.

The urine was acidified to pH 5·3 with hydrochloric acid, 2 vols. of ethanol was added, and precipitation was allowed to proceed for at least 16 hours. The precipitate was filtered off, washed twice with ethanol-water mixture (2 : 1) at pH 5·3, dried at room temperature, and extracted with 0·5% aqueous sodium carbonate. It was then centrifuged and the supernatant fluid obtained. This alkaline extract was reprecipitated at pH 5·3 with ethanol and the precipitate extracted again with sodium carbonate. The solution was neutralised just before injection. The final volume of extract was made up to 10 ml. for each 24-hour urine sample.

Results

Experiment I: Effect of Extracts on Liver Fat Content

Three separate groups of mice were used with each extract tested. The first group received 0·5 ml. of normal saline, the second 0·5 ml. of urine extract from people taking a normal diet, and the third 0·5 ml. of urine extract from the same people when they had been fasting. All injections were given subcutaneously and the animals were killed after a 6-hour fast. The liver fat was then estimated by the method of van de Kamer et al. (1949).

It is clear from table I that, in every experiment, the urine extracts obtained during fasting produced a significant increase in liver fat. Animals receiving the urine extracts from the same people when on a normal diet had liver fat values very similar to those found in the control animals. The increase in liver fat was linearly related to the dose of urine extract over the range 0·025–2·5 ml. per 100 g. (table II, col. 2, and fig. 2).

Since many substances can produce fatty livers in animals through a toxic effect on the liver itself, further evidence was needed to support the view that the effect of the fasting urine extracts was due to increased mobilisation of fat from the fat depots. Table II (cols. 3, 4, 5) shows the effect of fasting extract on blood-lipids. It can be seen that phospholipids, cholesterol, and "total lipids" all increased more or less progressively with increasing doses of extract. Further confirmation of the presence of fat-mobilising activity in the extracts was obtained from studies in which radioactive fat was used.

Experiment II: Fat Turnover Studies

Mice were given a diet containing glyceryl tripalmitate-1-^{14}C (2 μC daily) for 3 days. On the 4th day the animals received injections of saline or urine extracts. After a 6-hour period, during which food was removed, the animals were killed and the fat separately extracted from the liver, subcutaneous tissue, intestine with mesentery, and the rest of the body (residual carcass). The concentration of ^{14}C (specific activity) in the fat from each source was measured in a windowless gas-flow counter.

It was found that the activity of the liver fat was always much higher than that of the subcutaneous and residual carcass fat in control animals injected with saline (table III). There was a large variation, owing presumably to differences in the amount of labelled fat ingested and absorbed by each animal. The effect of the urine extracts was nevertheless remarkably well defined (fig. 3). In the case of the subcutaneous and liver fat the values obtained with the non-fasting extract did not differ significantly from the controls. The fasting extract, on the other hand,

3. Waterlow, J. *W. Ind. med. J.* September, 1956, p. 167.

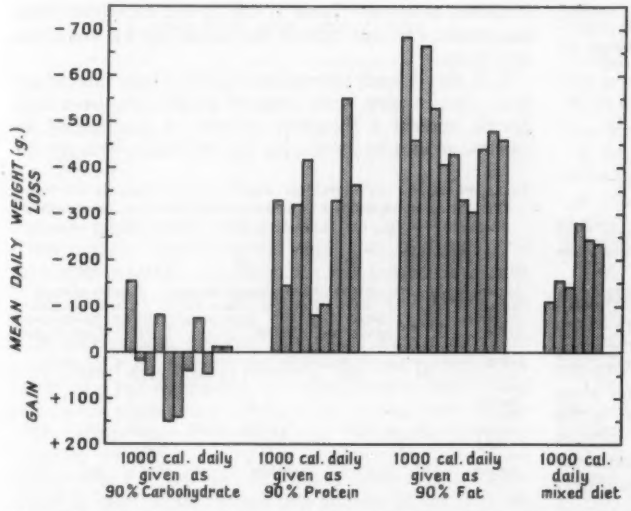

Fig. 1—Effect of alteration in the composition of 1000-calorie diets on body-weight of obese people. Daily weight changes are the mean figures of 5-9 day periods on each diet.

produced a fall in the specific activity of the fat from both sources. This extract also produced a fall in the activity of residual carcass fat as compared with saline. The effect of non-fasting extract on residual carcass fat could not be determined clearly owing to the wide scatter in the results obtained.

The total weight of subcutaneous and residual-carcass fat did not change appreciably. Therefore the decrease in specific activity after the fasting urine extract seems to be due to an increased turnover of fat: that is to say, both mobilisation and deposition of fat have been speeded up,

TABLE I—EFFECT OF INJECTIONS OF SALINE SOLUTION AND HUMAN URINE EXTRACTS ON MOUSE LIVER FAT

Source of urine	No. of mice used	Liver fat %			% increase $\left(\frac{F-C}{C} \times 100\right)$
		Saline solution (C)	Non-fasting urine	Fasting urine (F)	
Individual collections:					
1	15	3·6	3·8	4·6	22
2a	15	3·6	3·6	14·9	314
b	60	5·8	5·7	10·0	73
c	6	5·2	5·5	9·9	91
3	15	4·6	5·0	6·9	50
4	15	4·6	4·8	5·6	22
5	12	6·7	6·8	8·6	28
6	12	5·4	5·8	7·2	33
7	4	—	4·9	6·1	—
8	4	—	5·7	7·9	—
Pooled collections:					
9–20	39	5·5	5·5	9·1	66
21–32	4	4·4	—	7·2	64
33–38	4	4·15	—	7·0	68

the newly deposited fat being derived from unlabelled precursors. An alternative interpretation must be mentioned: that the recently administered fat, containing the radioactive label, had been more readily mobilised than the remainder of the depot fat. This view could account for the fall in specific activity of the depot fat, and would be consistent with the failure to detect a fall in the total amount only if the actual quantity mobilised was too small to be measured.

In the case of the liver, the increase in the total amount of fat after fasting extract must be taken into account. The fall in specific activity here must indicate dilution of the relatively strongly labelled liver fat by transfer of low-activity fat from the depots or increased hepatic synthesis of fat from unlabelled sources.

Taken together, therefore, measurements of the concentration of ^{14}C in fat from different regions provide further evidence that the fasting extracts contain a fat-mobilising substance.

Evidence was also obtained from this experiment that the effect of this material is not merely to transfer fat from the depots to the blood-stream and the liver but also to increase the rate of fat catabolism. (Table II [col. 6] shows that the blood ketones were increased following injections of the extract.) When mice were fed radioactive fat for 3 days and on the 4th day killed 6 hours after an injection of saline, about 60% of the administered activity could be recovered in the body fat (table IV). After injection with urine extracts from people eating a normal diet, the percentage recovered was similar. After injection with urine from the same subjects fasting, however, no more than 25–35% of the administered activity could be recovered as fat. Since the total amount of fat in these animals was not significantly less than in the controls, it appeared that the "fasting" urine extracts were capable of increasing the total metabolic turnover of fat in the animal as a whole.

TABLE II—EFFECT OF GRADED DOSES OF "FASTING" URINE EXTRACT ON LIVER FAT, BLOOD LIPIDS, AND BLOOD KETONES. 4 MICE WERE USED AT EACH DOSE LEVEL. MEAN VALUES AND PERCENTAGE CHANGES COMPARED WITH THE SALINE CONTROLS

Dose of extract (ml.)	Liver fat g. per 100 g.	Blood lipids			Blood ketones (mg. per 100 ml.)
		Lipid phosphorus (mg. per 100 ml.)	Total cholesterol (mg. per 100 ml.)	"Total lipids" (mg. per 100 ml.)	
Saline solution	3·9 (0)	5·4 (0)	57 (0)	430 (0)	0·9 (0)
0·01	4·1 (+5)	5·9 (+9)	53 (−7)	458 (+7)	1·5 (+66)
0·1	5·6 (+44)	6·1 (+13)	60 (+5)	500 (+16)	2·2 (+144)
1·0	7·1 (+82)	6·7 (+24)	63 (+10)	495 (+15)	2·6 (+189)
10·0	7·5 (+92)	7·1 (+31)	79 (+38)	580 (+35)	3·9 (+255)

Experiment III: Effects of Repeated Injection on Body-weight and Carcass Composition

Three groups of mice were injected subcutaneously on alternate days for 17 days—the first group with saline solution,

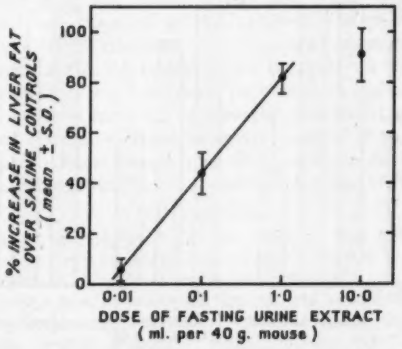

Fig. 2—Dose/response curve (semi-logarithmic) showing effect of fasting urine extract on liver fat content (4 mice at each dose level).

TABLE III—SPECIFIC ACTIVITY OF FAT EXTRACTED FROM VARIOUS TISSUES AFTER FEEDING GLYCERYL-TRIPALMITATE-1-^{14}C. 2 MICRO-CURIES GIVEN DAILY FOR 3 DAYS TO 20 MICE. ANIMALS KILLED ON THE 4TH DAY 6 HR. AFTER AN INJECTION OF SALINE SOLUTION

—	Counts per min. per mg. fat (mean ± 2S.E.M.)
Liver	997 ± 92
Intestine and mesentery	702 ± 164
Subcutaneous tissue	183 ± 16
Residual carcass	252 ± 28

the second with urine extract from people on normal food intake, and the third with extract from the same subjects when they had been fasting.

Table V (col. 4) shows that the group injected with saline solution lost a little weight, possibly because of the handling of the animals. The group receiving the non-fasting urine extract also lost a little weight. With the fasting urine extract there was a significantly greater mean loss of weight, amounting to over 6 g. per mouse at the end of 17 days. This finding again might signify no more than that the fasting urine extract contained a substance toxic to mice. The animals, however, remained ostensibly

TABLE IV—EFFECT OF SINGLE INJECTIONS OF "FASTING" URINE EXTRACTS IN INCREASING TURNOVER OF WHOLE BODY FAT. SERIES A (60 MICE) RECEIVED EXTRACTS 2B (TABLE I); SERIES B (49 MICE) POOLED EXTRACTS 9–20

Material injected 6 hr. previously	Fat extracted from whole carcass, including liver			
	Total amount of fat as % of saline control (mean and S.E.D.)		% of injected ^{14}C recovered (mean and S.E.M.)	
	Series A	Series B	Series A	Series B
Saline solution	100	100	60·0 (±7·1)	52·6 (±8·9)
Non-fasting urine extract	98	94 (±11)	50·8 (±9·4)	59·5 (±14·8)
Fasting urine extract	111 (±11)	105 (±6)	37·2 (±4·1)	25·3 (±4·0)

in good condition; in particular, their appetite was unimpaired. (Medical Research Council diet no. 41 was fed ad libitum: the difference between the weight of food offered and the weight remaining gave the amount consumed.) This seems to be strong evidence against the presence of a toxic substance in the fasting urine extract. Such a substance would be expected to impair appetite to a measurable degree.

The animals were killed at the end of the period and the

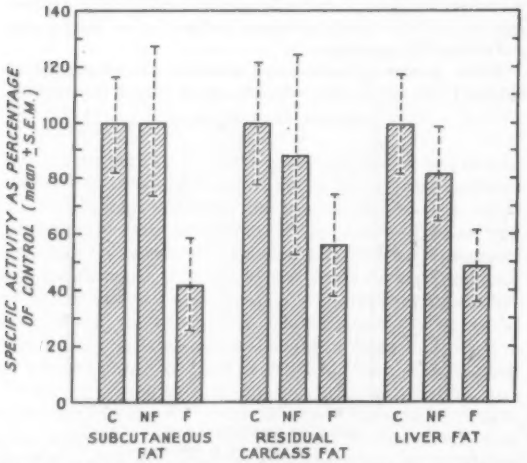

Fig. 3—Effect of urine extracts on specific activity of subcutaneous, residual-carcass, and liver fat. C, saline control; NF, urine extract (non-fasting); F, urine extract (fasting).

carcasses analysed. Table V, col. 5, and Fig. 4 show that the weight-loss was entirely accounted for by loss of fat and water.

It is, we contend, reasonable to assume from this experiment that extracts from urine of people who have been fasting contain a substance capable of accelerating fat catabolism in mice, producing loss of weight without any

TABLE V—EFFECT OF REPEATED INJECTIONS OF SALINE OR URINE EXTRACT ON BODY WEIGHT AND CARCASS COMPOSITION. EACH ANIMAL RECEIVED 0·5 ML. ON ALTERNATE DAYS OVER A 17-DAY PERIOD

(1)	(2)	(3)	(4)	(5)		
Material injected (volume (0·5 ml.)	No. of animals	Mean food intake (% of control)	Body-weight change (g. per mouse per day) (mean ± S.E.M.)	Carcass analysis (% body-weight)		
				Fat	Water	Protein
Saline solution	30	100	−0·109 (±0·055)	13·5	64·3	11·9
Non-fasting urine extract	10	101	−0·118 (±0·042)	13·4	63·7	11·8
Fasting urine extract	20	98	−0·360 (±0·049)	11·8	66·1	13·6

significant reduction in the calorie intake of the animals and without any apparent impairment of their health or appetite.

Experiment IV: Examination of Urine Extracts by Paper Chromatography

Attempts were then made to identify the active substance. The two extracts, one from people taking a normal diet and the other from the same people after fasting, were examined by paper chromatography. When acetic-acid/water mixtures were used as the solvent, a substance was found in the fasting urine extract which was absent from the non-fasting extract. This could be located with ninhydrin.

Larger amounts of material were separated by chromatography and then eluted from the paper. The eluate was dried and made up to the original volume as applied to the paper. This material was injected into mice and again found to increase the liver fat (table VI). The remainder of the paper and, in particular, adjacent areas were separately eluted and these eluates injected into mice. Table VI also shows that the active substance was absent from other parts of the paper.

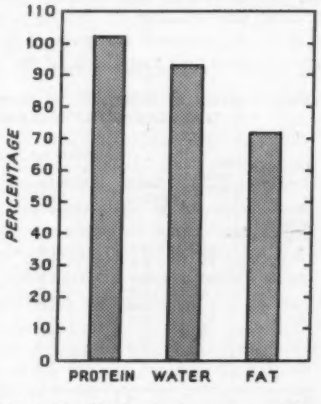

Fig. 4—Total body protein, water, and fat of mice who had received fasting urine extract over a 17-day period, expressed as % of initial values. (Initial composition of experimental group assumed to be the same as final composition of control groups.)

It appeared possible, therefore, by means of paper chromatography to separate material from the urine extracts of healthy people who had been fasting which was absent from the urine of the same subjects taking food. This partially purified material had the property of increasing the fat content of the livers of mice, under the same conditions as in experiment I.

TABLE VI—EFFECT ON LIVER FAT OF ELUATES FROM VARIOUS PORTIONS OF THE FASTING URINE CHROMATOGRAM

—	Mean liver fat (g. per 100 g. liver)	% increase
Saline control	5·1	—
Urine extract F	8·7	71
After chromatography:		
Saline control	5·1	—
"Active" spot	7·7	51
"Tail" of spot	5·5	8
"Inactive" paper	5·3	4

Other Investigations

Preliminary investigations were also undertaken to determine whether this substance was present in human urine in other conditions associated with weight-loss, besides complete fasting.

In three obese patients, who were kept throughout periods of 2 or 3 weeks on diets of equal calorie value (1000 calories), weight-loss was greatest when the calories were given mainly in the form of fat; losses were smaller with high-protein diets (table VII). When carbohydrate made up the major part of the calorie intake, little or no weight was lost (cf. fig. 1). When urine extracts were tested in mice, it was found that activity in the liver-fat test was again greatest during the high-fat periods and least during high-carbohydrate periods. Moreover, material resembling that found in fasting urine could be demonstrated in the urine by paper chromatography during high-fat and high protein periods, but could not be detected when calories were supplied in the form of carbohydrate.

Data on two patients with widespread malignant disease, one of whom was taking a fairly normal diet, are also included in table VII. In both patients the urine was active in increasing mouse liver fat and the chromatogram was positive.

Conclusions

It is conceded that any one of these experiments viewed in isolation is open to a different interpretation from that offered and indeed to possible objections. Nonetheless, when the evidence is examined as a whole, it is difficult or impossible to escape the conclusion that a substance or substances exist in the urine of healthy people who have been fasting, and probably in other conditions, which has the properties of mobilising depot fat in mice, increasing the amount of fat in the liver, and increasing the rate of fat metabolism. This substance, when given over a period of time, produces loss of body-weight in the animals without impairing their appetite.

TABLE VII—EFFECT OF URINE EXTRACTS ON MOUSE LIVER FAT AND RESULTS OF CHROMATOGRAPHY IN 3 OBESE PEOPLE ON 1000-CALORIE DIETS AND IN 2 PATIENTS WITH MALIGNANT DISEASE

(1) Patients (all female)	(2) Diets	(3) Body-weight change (kg. per week)	(4) % increase in mouse liver fat	(5) Chromato-graphic evidence
1. Obese	90% carbohydrate	−0·8	7	0
	90% fat	−2·8	47	+
2. Obese	90% carbohydrate	−0·4	2	0
	90% fat	−2·5	73	+
	90% protein	−0·5	39	+
3. Obese	90% fat	−2·3	65	+
	90% protein	−0·8	50	+
	90% carbohydrate	+0·1	13	0
4. Terminal malignant disease	Appetite very poor	−1·9	69	+
5. Carcinomatosis (breast)	Eating fairly normal diet	−0·4	43	+

Summary

A substance or complex is present in the urine of healthy people who have been fasting, which on injection into mice:

1. Increases the total amount of fat in the liver.
2. Mobilises fat from the fat depots.
3. Appears to increase the total metabolic turnover of fat in the animals.
4. Causes weight-loss without depressing appetite when given over a period of time, the loss being in the form of body-fat and water.

The active material has been partially purified by paper chromatography.

This substance or complex cannot be detected in identical extracts made from the urine of the same people when they are taking a normal diet.

The substance, called here fat-mobilising substance, seems to be present in the urine in certain conditions, besides fasting, associated with weight-loss.

We should like to acknowledge our indebtedness to the clinical research committee of the Middlesex Hospital for so generously placing facilities for keeping animals at our disposal, and to Mr. A. C. Catchpole for his assistance in looking after them; to Sir Charles Dodds for his advice and criticism; and to Dr. J. F. Tait for his advice on radioactive technique.

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STAPHYLOCOCCAL PERITONITIS IN THE NEWBORN

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MINOR staphylococcal infections in the neonatal period have been increasingly reported in recent years. Forfar et al. (1953), commenting on this increase, drew attention to the potential dangers of such infections. Reports by Sullivan (1956), Disney et al. (1956), Beaven and Burry (1956), and Forbes and Emerson (1957) suggest an increasing incidence of staphylococcal pneumonia in young infants in Australia, Britain, New Zealand, and the United States respectively.

Although in this age-group there is an increased incidence of all staphylococcal lesions, no report on staphylococcal peritonitis can be found in the English literature over the past ten years. Nana and Mircioiu (1948) reported two cases of primary enterococcal peritonitis, and Ryan (1953) cited one case of primary staphylococcal peritonitis at the Edinburgh Royal Infirmary in 1929–53.

Five cases of staphylococcal peritonitis in the neonatal period are now reported because the clinical picture was constant enough to make diagnosis possible in the three later cases. These babies were all admitted to the Christchurch Hospital in the two years before July, 1957.

Case-reports

Case 1.—A boy, aged 14 days, born at full term, was admitted on April 29, 1956, with twenty-four hours' history of refusal to feed, pallor, and abdominal distension.

On examination he was pale, listless, and acutely ill, with grunting respirations, peripheral cyanosis, and a uniformly distended tender abdomen. Bowel sounds were absent. Scattered papules and two pustules on the legs suggested staphylococcal septicæmia. The chest was clear on auscultation.

Treatment was started with oxygen, penicillin, and intramuscular chloramphenicol, but the baby died in three hours.

Necropsy revealed well-marked generalised peritonitis due to *Staphylococcus aureus* resistant to penicillin and the tetracyclines, but sensitive to other antibiotics.

Case 2.—A girl, aged 20 days and weighing 5½ lb., who was born three weeks prematurely, was admitted on Aug. 20, 1956, with thirty-six hours' history of listlessness and twelve hours' history of vomiting. Severe abdominal distension had been noticed during the twelve hours before admission, but only one offensive motion had been passed. Greatly reduced bowel sounds were heard over this distended tympanitic abdomen.

Treatment.—A provisional diagnosis of meconium ileus led to treatment with subcutaneous fluids and laparotomy. Operation by Mr. J. Ardagh revealed purulent peritonitis. Despite a diligent search no local cause for this was found. Peritoneal swabs grew *Staph. aureus* resistant to penicillin and the tetracyclines but sensitive to chloramphenicol and erythromycin. Treatment with intramuscular erythromycin 100 mg. six-hourly was started. After a stormy postoperative course, with an infected wound and severe anæmia requiring infusion with packed red cells, the baby was discharged on Oct. 9, 1956. There was no history or evidence of antecedent skin infection.

Case 3.—A girl, aged 13 days, was admitted on Dec. 6, 1956, with twenty-four hours' history of refusal to feed and vomiting. For two days she had had no bowel motion, and increasing abdominal distension had been noticed.

On examination her abdomen was tender and distended, and bowel sounds were absent. No skin lesions were detected after careful search.

Treatment.—Primary staphylococcal peritonitis was diagnosed, and laparotomy and drainage of the abdomen were done. Peritoneal swabs grew *Staph. aureus* resistant to penicillin and streptomycin but sensitive to all other antibiotics tested. Intravenous aureomycin 250 mg. b.i.d. was first used, and then erythromycin 100 mg. six-hourly, both orally and by intramuscular injection.

Progress.—Recovery was slow and complicated by staphylococcal subcutaneous abscesses; hence the baby was not discharged from hospital until Jan. 23, 1957.

Case 4.—A girl, aged 21 days, had developed in the first week of life a small pustular lesion on her left hand. This lesion had been incised and painted with 1% gentian-violet solution. She was admitted to hospital on Jan. 26, 1957, with a week's history of apathy and forty-eight hours' history of increasing abdominal distension and vomiting.

On examination she was pale and breathless, with distended tympanitic abdomen in which no bowel sounds were heard.

Treatment.—Staphylococcal peritonitis was provisionally diagnosed and treatment with intravenous erythromycin and fluids started, but the baby died within three hours of admission.

Necropsy confirmed the staphylococcal peritonitis and revealed also a liver abscess. The *Staph. aureus* was resistant to penicillin, streptomycin, and the tetracyclines but insensitive to chloramphenicol and erythromycin. The necropsy findings showed that umbilical infection had spread to the liver and peritoneum, despite the absence of any clinical evidence or history of umbilical sepsis.

Case 5.—A boy, aged 7 weeks, was admitted on Nov. 14, 1957, with three days' history of abdominal pain. He had not had any skin lesions, but his mother had had mastitis severe enough to necessitate weaning a few days before the onset of the baby's illness.

On examination the baby had a high swinging temperature, and distended abdomen, with reduced bowel sounds.

Treatment.—Laparotomy five days after admission revealed generalised peritonitis, which gave a heavy growth *Staph. aureus* only partially sensitive to penicillin but sensitive to all other antibiotics tested. Considerable improvement followed six days' treatment with chloramphenicol. Convalescence was complicated by subcutaneous abscesses, suggesting spread of the infection via the blood-stream.

Discussion

In the five years before 1955 there were few recorded deaths from staphylococcal pneumonia or septicæmia in infants admitted to the Christchurch Hospital. Since Beaven and Burry (1956) reported an explosive outbreak of staphylococcal pneumonia in newborn babies in a Christchurch maternity hospital there has been an increased number of all staphylococcal infections in this age-group. From that date (December, 1955) to July, 1957, thirty-five newborn babies were admitted to the Christchurch Hospital with staphylococcal infections. Five of these had staphylococcal peritonitis and showed a remarkably constant clinical picture. The following features enabled a strong provisional diagnosis of staphylococcal peritonitis to be made in the last three cases: (1) a history of vomiting unassociated with diarrhœa; (2) a tender distended tympanitic abdomen with reduced or absent bowel sounds; (3) pre-existing staphylococcal skin lesions (present in case 4 and in case 5's mother).

In case 4 the infection was probably via the umbilical cord, because histological sections of the cord showed bacteria and a liver abscess was present, but there was no superficial evidence of umbilical sepsis on clinical examination.

In the other cases it is reasonable to assume that the bacteria were blood-borne (no blood was cultured). A previous history of staphylococcal infection would suggest septicæmia.

These cases of peritonitis did not develop before the 14th day of life. Murray et al. (1953) have shown that transmitted maternal antibodies appear to protect the baby in the first 2 weeks of life.

Differential diagnosis.—Rickham (1955) reported 17 cases of peritonitis in newborn babies in three and a half years and suggests that peritonitis is not rare in this age-group. The more common causes are perforated or gangrenous bowel and meconium ileus; but staphylococcal peritonitis is one cause of acute bacterial peritonitis and should be considered when there is a history of other staphylococcal lesions. The tympanitic silent abdomen should prevent confusion with respiratory infections in these cyanosed and distressed babies, who often had rapid grunting respirations.

Treatment.—Adequate treatment with the correct antibiotic seems to influence the prognosis, and on present knowledge erythromycin 150–200 mg. per kg. of body-weight daily, alone or in combination with novobiocin 100 mg. per kg. of body-weight daily, is preferred. Laparotomy in cases 2, 3, and 5 allowed drainage of the pelvis and is necessary to exclude the commoner causes of peritonitis. Dehydration and electrolyte imbalance from vomiting may need to be corrected before operation. In severely shocked and collapsed babies there is a place for the use of intravenous hydrocortisone.

Summary

Five cases of "primary" staphylococcal peritonitis in newborn babies are described.

A silent or near silent abdomen which was tender, tympanitic, and distended was uniformly present.

This uniform picture and the preceding history were helpful in diagnosis.

I wish to thank Dr. J. F. Landreth, senior pædiatrician, Christchurch Hospital, under whose care these cases were admitted, for his interest and helpful criticism and for permission to publish; Mr. J. Ardagh, who operated on cases 2 and 3 and has also offered

helpful criticism; and Dr. D. T. Stewart, director of the department of pathology, for the necropsy reports.

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"ENCEPHALITIS TREMENS"

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Two outbreaks of encephalitis with widely differing features and natural history have lately been described, one from Sierra Leone (Rose 1957) and the other from a London hospital (Medical Staff of the Royal Free Hospital 1957). We here record 25 cases of encephalitis seen at the Methodist Mission Hospital, Ilesha, Western Nigeria, which presented with characteristics different again, but in which the clinical picture was so distinct as to suggest a pathological unity. Neither of us had seen such a condition before: and in spite of the interest, advice, and generous help of many colleagues we have been unable to come to any proven conclusions about its ætiology.

Incidence

The hospital serves a rural town of about 75,000 population, and a district of about the same population again. During the last two weeks of September, 1956, 14 patients were admitted with a syndrome whose chief feature was tremor; and during the latter half of October, a further 11 patients were admitted with the same condition. That all 25 cases formed a clinical unity, one could not doubt, for they were strikingly similar in many respects. Since we became aware of the condition, we have been able to trace the records of sporadic cases in the same months of previous years; and last year (1957) more cases were seen.

All the patients recovered, and we have therefore no necropsy findings; and though the epidemiology of the condition has been studied in some detail we have not been able to form any definite opinions about it.

Clinical Features

These are best illustrated by the history of one of the earlier patients.

A Yoruba woman (case 3), aged 24, was admitted to the hospital at 9 A.M., Sept. 17, 1956. She had, it seemed, been perfectly well until 8 A.M. the previous day, when she suddenly complained of headache and dizziness. A little later she vomited, and there was also some colicky abdominal pain, but no diarrhœa. After this she could not remember what happened, but relatives said that she started to " shake all over "; and that though she appeared able to hear questions and commands, she was unable to reply to them.

She had a gross, coarse, rhythmical tremor of the entire body, exaggerated by sitting up and especially by standing. She was conscious but unable to speak. Her temperature was 99·2°F. She was treated with mephenesin and magnesium sulphate by mouth, and bed rest. Lumbar puncture yielded an entirely normal fluid.

Next day she recovered her speech, and on the fourth day the tremors finally disappeared.

The detailed histories in the other cases are given in the table; in sum, they were all characterised by:

(1) Sudden onset of giddiness, followed by
(2) Vomiting, with or without abdominal pain, followed by
(3) Generalised tremors, which might or might not be followed by
(4) Aphasia, or unconsciousness (semicoma), or both.

Onset of giddiness.—The onset was always sudden, and no patient complained of antecedent illness. Usually within an hour of the giddiness came vomiting, though in no case was this protracted and, in practically all, it had ceased on arrival at hospital. Soon after the vomiting, tremor began.

Tremor was the most dramatic feature of the syndrome. It varied widely in severity, but had common features in all the patients. Thus, it was generalised (affecting the head as well as the limbs and the trunk), rhythmical, and coarse. It was exaggerated by sitting up, or by any attempt at movement: and might become violent if the patient attempted to stand up. The tongue often showed a similar tremor: and in several cases the eyes showed conjugate and horizontal spontaneous

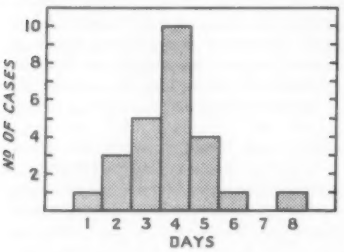
CLINICAL SUMMARY OF 25 PATIENTS

Case no.	Age and sex	Onset	Presentation	Duration (days)	Vomiting at onset	Aphasia	Semi-coma	Neck rigidity	Maximum temp. (°F, axillary)	Maximum blood-pressure (mm. Hg)	Retention of urine
1	8 M	5 A.M., sudden	Giddiness	4	N.R.	Nil	Nil	N.R.	100·0	N.R.	..
2	25 F	Noon "	"	4	Present	Present	"	Slight	99·6	90/60	..
3	24 F	8 P.M. "	"	3	"	"	"	N.R.	99·4	N.R.	..
4	36 F	8 P.M. "	"	6	"	"	Present	"	99·2	"	..
5	37 F	11 P.M. "	"	2	Twice only	"	8 days	Mild	100·4	90/60	..
6	8 F	A.M. "	Tremor	8	Present	1 day	Nil	N.R.	100·4	N.R.	..
7	50 F	1 P.M. "	"	5	"	Present	12 hours	Mild	100·0	126/80	..
8	40 F	2 A.M. " (woken up)	"	5	"	Nil	Nil	"	99·4	120/60	..
9	28 F	4 P.M. "	Giddiness	3	"	"	"	Nil	100·4	108/76	..
10	3 F	11 P.M. " (woken up)	Tremor	4	"	Present	3 days	"	100·0	N.R.	At onset
11	2½, M	11.15 P.M. (woken up)	"	2	N.R.	Nil	2 days	"	N.A.	"	..
12	36 F	2 P.M. sudden	"	1	Nil	"	Nil	Mild	99·6	100/50	..
13	18 F	5 A.M. "	Giddiness	3	Present	"	"	Nil	99·0	96/68	..
14	12 M	Midnight "	Vomiting	3	"	"	"	"	99·0	N.R.	..
15	30 F	2 P.M. "	"	4	"	"	"	"	99·4	116/?	..
16	45 M	N.R.	N.R.	5	N.R.	"	"	"	99·0	134/90	..
17	35 M	2 A.M., sudden	Giddiness	4	Repeated	"	"	"	99·6	N.R.	Transient
18	26 F	4 A.M. "	"	3	Present	"	"	N.R.	101·6	"	For 2 days
19	13 M	P.M. "	Vomiting	2	"	"	"	"	99·6	"	..
20	39 M	11 P.M. " (woken up)	Tremor	4	7 hr. later	"	"	Nil	99·0	140/98	..
21	32 F	P.M. "	"	5	Nil	"	"	N.R.	99·6	130/80	..
22	30 F	Midnight "	Giddiness	4	Present	" Speaks with difficulty "	"Dazed"	"	99·0	N.R.	..
23	42 M	3 A.M. "	"	4	"	Nil	Nil	"	98·8	"	..
24	24 M	8 P.M. "	"	4	12 hr. later	"	"	Nil	98·4	124/64	..
25	54 M	7 P.M. "	Tremor	4	Retching only	Present	"	"	103·0 (Transient −3rd day)	112/70	..

N.R. = not recorded. N.A. = results not available.

oscillations. All the movements abated on lying down, and disappeared during sleep. Left to pursue their own course (as in many of the later cases) the tremors abated in four or five days (see figure); their duration had no relation to their initial severity. Though often complaining of some residual headache, the patients thereafter appeared perfectly well, and in no case was any personality change noticed by the relatives.

Consciousness.—Throughout the period of tremor, many patients were mentally alert and able to speak normally, though the tremor rendered them extremely ataxic and unable to walk without support. In 8 cases, however, there was an aphasia of motor type, the patients apparently being able to hear and understand questions and commands but unable to reply. In 5 cases there was unconsciousness (semicoma); only painful stimuli drew a response, with an exaggeration of the tremor. Although this semicoma lasted alarmingly in one child for eight days, its duration was usually short; and the patients returned rapidly to normal consciousness once recovery started, with no intervening period of confusion and no retrograde amnesia.



Duration of tremor from onset.

Speech defect.—When it occurred, the defect appeared to be a true aphasia of motor type: for these patients could plainly understand commands, and their sensory perception appeared to be normal. Furthermore, physical examination showed no other abnormality of motor power in the distribution of the cranial nerves, and lip movements were normal.

Fever.—Many patients had a low fever: in only 5 did this exceed 100°F (and then transiently); and in the majority, the temperature did not exceed 99·4°F (axillary).

Muscle tone was usually normal, or somewhat reduced, though a mild neck rigidity was noted in some at the onset.

Of the *reflexes*, the abdominals could not be elicited in many patients, nor in some the knee and ankle jerks; but, in general, tendon reflexes were present and symmetrical. 3 patients had transient *incontinence of urine*, and 1 needed catheterisation for two days. No true nystagmus was seen in any, but conjugate oscillatory movements of the eye (of the type described above) were seen in several patients.

Loss of consciousness necessitated, of course, careful adjustment of water and salt balance, but otherwise did not appear to affect the prognosis.

Investigations

Lumbar puncture was performed in 12 cases, but in all a clear fluid of normal cell count and pressure was withdrawn: and we gradually came to feel that it taught us little about the patients and was therefore better avoided.

In 2 cases the *urine* was searched for alkaloid constituents which might point to a toxic origin, but in no case was any abnormality found.

Serological examinations in 7 of the patients, by Dr. James Portafield, of the virus research unit of the West African Medical Research Council, disclosed no abnormality to suggest that a virus was responsible.

In fact, the condition has so far yielded little to clinical and pathological examination.

Natural History

The syndrome, though alarming, was never fatal. Both dizziness and vomiting were transient prodromal symptoms; and the vomiting was never sufficiently severe to lead to difficulties with water and salt balance. The tremors were the most persistent as well as the most dramatic symptom, but they too, after a maximal onset, gradually abated and disappeared in the periods shown above. Both the aphasia and the unconsciousness, where present, usually abated within three days, though in one child semicoma alarmingly persisted for eight days.

Ætiology

Age and sex.—All ages from childhood to adult life were represented (see table). (In this setting, any age over 20 tends to be inaccurately reported.) The first part of the outbreak (14 cases, September, 1956) affected only children and women: and we spent some time considering the possible significance of this. The second group, however (11 cases, October, 1956) included 7 men.

Timing and incidence.—The outbreak was spread over a period of six weeks, and then abated, arising in two distinct "waves", which suggested an infection. Conversely, however, when the times of onset were plotted (and the onset was always so sudden that this could be done), the vast majority were seen to lie between 7 P.M. and 5 A.M. Considering the fact that in this rural society the main meal of the day is from 5 P.M. onwards, these figures might suggest (if they have any significance at all) that the condition was of toxic origin. An extraordinary coincidence of onset within half an hour of each other in cases 10 and 11 (who were cousins living in the same household and sharing the same food) may also suggest the same conclusion.

Geographical distribution.—It is of interest that all 25 patients came from Ilesha, and none from the surrounding district. Ilesha is a typical densely populated Yoruba town. The average number of occupants per house is of the order of 20, and in some houses many more. Yet apart from cases 10 and 11 already mentioned, and cases 1 and 2 (mother and child), no 2 patients came from the same household, and the geographical distribution of patients did not point to an infection.

Diet.—No common factor in the patients' diets was discovered which might account for the condition. There was some difficulty in recovering relevant specimens owing to the prevalent habit of finishing the food at any one mealtime. But several specimens were nevertheless obtained, and analysis was kindly undertaken by Dr. John Broadbent. In no case was any abnormal alkaloid discovered: and similar analysis of the urine of 2 of the patients failed to show any such substances being excreted.

Serology.—The investigations proved completely negative.

The two obvious possibilities were an intoxication due to foodstuffs or other sources, and a virus encephalitis. The scales seemed weighted in favour of encephalitis; but we cannot prove it. The similar cases in the same months of other years—at a season when food habits are not subject to change—is another argument for the "infective" view.

Discussion

Tremor was the most dramatic and characteristic feature. The associated loss of consciousness and the aphasia, indicate that the lesion affects the cerebrum: but the rhythmical coarse tremors of the limbs, and the oscillatory movements of the eyes suggest also an affection of the basal ganglia and the mid-brain. This in turn suggests that, whatever the lesions may be, it is widespread: and yet it is so constant on distribution that the clinical picture is remarkably uniform—a picture, moreover, which is associated with little or no change in the cerebrospinal fluid.

The Lancet (1956) discussed a series of outbreaks of encephalitis, and suggested that several of these outbreaks might be grouped under the provisional title "benign myalgic encephalomyelitis". Although the term has been disputed, the classification seems at least to be temporarily valuable, in that it does cover a group of outbreaks with many common features.

The Ilesha patients share three important features with that group:

(1) In spite of a profound neurological disturbance, the cerebrospinal fluid remained normal in all.

(2) No evidence of the causative virus (if such there be) could be found.

(3) The outcome was uniformly benign.

In clinical features and natural history, however, these patients present a completely different picture to that of " benign myalgic encephalomyelitis ". About the only point of resemblance is " the curious jerky response of the affected muscles to volition " which, Acheson (1957) remarks, " may yet prove to be a further clinical manifestation of benign myalgic encephalomyelitis ".

Summary

An outbreak of encephalitis in the Western Region of Nigeria in 1956 involved 25 patients over a period of six weeks. The onset was abrupt; giddiness, followed rapidly by vomiting and characteristic tremors, were the main features of a remarkably constant clinical picture. Semicoma, aphasia, or both supervened in some patients. Abnormal physical signs were few; and lumbar puncture was always negative, as were also the results of serological investigation. The condition proved benign, with no permanent sequelæ. Similar cases were found in the hospital records for the same season of previous years; and again in 1957.

No definite conclusions could be drawn about the cause of the epidemic. This syndrome was unlike anything that we—or the many colleagues we discussed it with—had seen before.

Our thanks are due to our colleagues, Dr. C. A. Pearson and Dr. David Cannon, of the Methodist Mission Hospital, Ilesha, who also saw these patients: to Prof. Alexander Brown, Dr. M. MacGregor, and Dr. R. Hendrickse of the department of medicine, University College, Ibadan, and to Colonel John Walters of the West African Medical Research Council, with whom the cases were discussed; to Dr. John Broadbent, department of pharmacology, University College, Ibadan, who undertook the analysis of various foodstuffs; and to Dr. James Portafield, virus research department, West African Medical Research Council, who undertook the serological investigations.

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HEPATOJUGULAR REFLUX

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FILLING of the external jugular veins when pressure is applied to the abdomen of patients with heart-failure was first described by a medical registrar at the Middlesex Hospital (Pasteur 1885). Rondot (1898), who used bimanual compression of the liver, realised that Pasteur was wrong in believing the test to be pathognomonic of tricuspid disease, because he observed the reflux in patients who later were found at necropsy to have healthy tricuspid valves. The test became known as the Pasteur-Rondot test or, more generally, hepatojugular reflux. However, pressure anywhere on the abdomen, not only over the liver, will fill the jugular veins (Lian and Blondel 1925).

In estimating venous pressure by the clinical method (Lewis 1930) pressure on the abdomen is often used to determine whether a pulsation in the neck is venous or arterial in origin. A venous pulsation is almost invariably altered by this manœuvre; an arterial pulsation is unchanged.

For a long time hepatojugular reflux has been regarded as a sign of cardiac failure; it has been described as probably the earliest sign in chronic cor pulmonale (Gillanders 1949, Oram 1956). If a positive hepatojugular reflux can be taken to show cardiac failure when there is no other evidence, it is important to understand the mechanisms involved and the possible sources of error. For this reason we investigated the hepatojugular reflux, measuring changes in the central venous pressure in the superior vena cava with an electromanometer.

In routine practice the internal jugular vein serves as a reliable manometer (Lewis 1930), and is more reliable than the external jugular vein, which may give false readings (J. McMichael, personal communication). Wiggers (1914), however, emphasised that the effective filling pressure of the heart cannot be determined simply by manometers equilibrated with atmospheric pressure, but that it must be calculated on the difference between pressures inside and outside the right atrium. For this reason a differential manometer which provided the algebraic sum of venous and intrathoracic pressures was used.

Material and Methods

(1) 6 healthy people and 2 patients with severe emphysema were studied lying flat. A 24 lb. lead weight with a surface area similar to that of the hand was placed on the abdomen, and the intrathoracic and intra-abdominal pressures were measured simultaneously.

These measurements were obtained from water-filled open-ended plastic tubes in the œsophagus and stomach (Dornhorst and Leathart 1952) and recorded with capacitance manometers ('Minirack,' Southern Instruments Co.). The reference point was 10 cm. above the table. Changes in chest circumference were recorded from a mercury-filled rubber-tube stethograph of the type described by Wade (1954). A simultaneous spirometric record was obtained by incorporating a potentiometer in a Benedict-Roth spirometer. These four parameters were recorded simultaneously on a four-channel photographic recorder (Elmquist).

(2) 7 healthy people, 2 asthmatics with a normal circulation, and 14 patients with heart-disease (7 of whom had venous hypertension) were studied lying flat.

Intrathoracic pressure was measured through a water-filled polyethylene tube, about 100 cm. long and 1 mm. in internal diameter, passed through the nose into the œsophagus (Dornhorst and Leathart 1952). An identical tube was used to measure venous pressure so as to reduce differences in damping to a minimum. This was introduced into the basilic vein of the left arm either through a needle or, under direct vision, through a small incision. The tube was advanced to a distance previously determined by a surface measurement until the pressure record on the oscilloscope showed a response to coughing similar to a simultaneous œsophageal pressure record. Then it was assumed to be in the superior vena cava.

Pressures were recorded with capacitance manometers. One of two reference points was used—either the sternoclavicular joint or the " phlebostatic axis "* (Winsor and Burch 1946).

* The " phlebostatic axis " is the line of intersection between a plane drawn through the mid-axillary line and a plane passing at right angles to this at the level of the fourth intercostal space at the sternal edge.

The reference point and the anteroposterior diameter of the chest are recorded with each figure. A single 25 cm. column of saline solution was used as standard for both manometers.

The manometers recording central venous and intrathoracic pressure were used in conjunction as a differential manometer, the electrical output from one manometer being opposed to that of the other (Lee et al. 1954). This was arranged so that the differential record—the "filling pressure"—was positive when the venous pressure was higher than the œsophageal pressure. The two direct pressures were monitored on a cathode-ray oscilloscope and recorded together with the differential pressure and an electrocardiogram by a four-channel photographic recorder.

Because it is difficult to maintain a constant pressure with the hand, the lead weight already described was placed centrally on the abdomen. This particular weight was chosen because the subjective sensation was similar to that produced by compression with the hand of the physician attempting to demonstrate reflux. Hultgren (1950), however, considered that a 15 lb. weight approximated to the pressure with the hand.

Results

Effect of Application of Weight on Breathing

When a weight was applied to the abdomen, the intra-abdominal pressure always rose. The effect on intrathoracic pressure was variable not only from one person to another but also with repetition in the same person. If the subject "accepted" the weight, without abdominal resistance, the chest had to take over some of the diaphragmatic share of ventilation. Fig. 1A shows that this new type of breathing, shown by the spirometer, was achieved by increasing the chest circumference. The unchanged intrathoracic pressure indicated that the increase in chest circumference had compensated for the reduction in chest volume which resulted from the ascent of the diaphragm (shown radiographically by Lian and Blondel 1925). If the subject resisted, the weight was supported partly by descent of the diaphragm (fig. 1B). The chest circumference was unchanged, the intra-abdominal pressure rose higher than in fig. 1A, the intrathoracic pressure fell, and the spirometer showed that the intrathoracic volume had increased considerably.

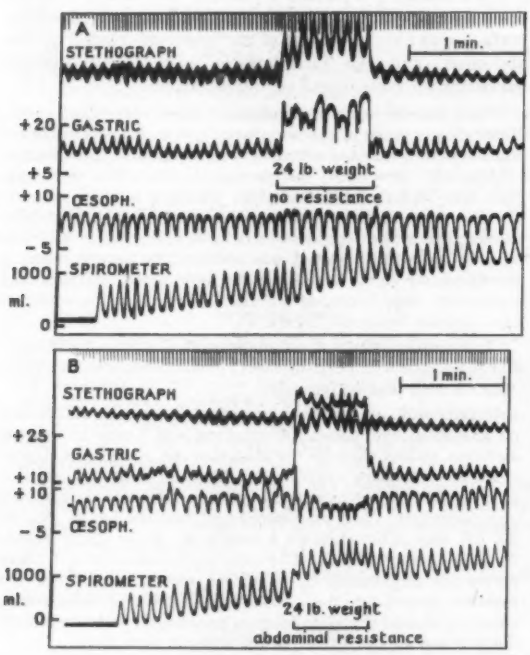

Fig. 1—Simultaneous records obtained in healthy person during application of weight to abdomen: A, without abdominal resistance; B, with resistance. Note that in B gastric-pressure tracing crosses stethographic tracing during application of weight. Reference point 10 cm. anterior to back; anteroposterior diameter of chest 24 cm. Standards in cm. saline. Time marker lines, 2 sec.

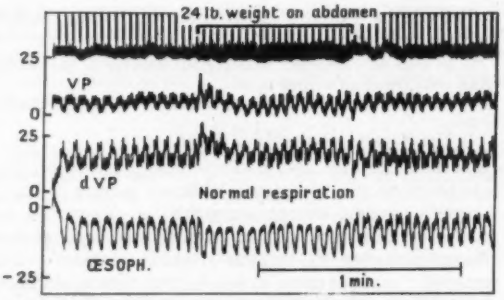

Fig. 2—Healthy person: (from above downward) time marker (2 sec.); electrocardiograph; V.P., central venous pressure; dVP, differential or filling pressure; Œsoph., œsophageal pressure, as intrathoracic pressure. Reference point sternoclavicular joint; anteroposterior diameter of chest 20 cm.

It was impossible to predict the subject's response when no instructions were given about what he should do. If the weight caused discomfort, he would resist. If it did not, he tended to resist less with repetition as he found that breathing was easier if it did not involve moving the weight—i.e., if it was more "thoracic" than "diaphragmatic". If instructions were given that he should not resist the weight, better repeatability was found, but even then there were significant variations in the results. The chief relevant effect of resisting the weight is that it increases the pressure gradient across the diaphragm, which encourages the transfer of blood from abdomen to chest.

In the 2 patients with emphysema the results were different. Whether the patient resisted the weight or not, the effect of its application was to raise intrathoracic pressure. In a further study of 7 patients with emphysema the intrathoracic pressure alone was recorded during the application of the weight to the abdomen. The intrathoracic pressure rose considerably in 3, slightly in 2, and not at all in the remaining 2. In severe emphysema the chest is nearer the position of full inspiration throughout the respiratory cycle than it is in a healthy person. The patient is therefore deprived of a mechanism for keeping the intrathoracic pressure at its resting level by further expansion of the chest. In the 2 patients in whom the intrathoracic pressure remained unchanged the chest was probably capable of further expansion to compensate for the ascent of the diaphragm.

Effect of Application of Weight on Central Venous and Filling Pressures

Normal.—When the weight was applied to the abdomen in the 5 healthy people, there was a transient rise in venous pressure. This rise was usually of short duration—e.g., through three respiratory cycles (fig. 2). However, there were minor variations which were due mainly to variations in the type of breathing response. The venous pressure

may even fall during the application of the weight if the subject breathes purposefully nearer his inspiratory maximum than normally. There was then a greater than normal rise in filling pressure, reflecting the greater increase in venous return that results from the greater pressure gradient across the diaphragm. The central venous pressure, however, fell after an initial small rise. During the same type of breathing but without the application of the weight, the filling pressure still rose and the central venous pressure fell. The initial peaks in both the central venous and filling pressures were lacking, indicating that application of the weight produces reflux of blood from the abdomen to the chest. As already stated, the response altered with repetition. However, to assess the situation accurately in any one person it would be necessary to have a simultaneous record of spirometer, stethograph, intra-abdominal pressure, intrathoracic pressure, and central venous and filling pressures. Technically this was beyond our means.

A fall in central venous pressure during the test was only seen in healthy people deliberately breathing near their inspiratory maximum. The fall was then attributable to the fall in intrathoracic pressure. The filling pressure always rose, usually for a short time.

Cardiac failure.—With heart-failure the extent and duration of the rise in venous pressure was greater than in healthy people. An extreme example is shown in fig. 3. In those people whose venous pressure was high at rest

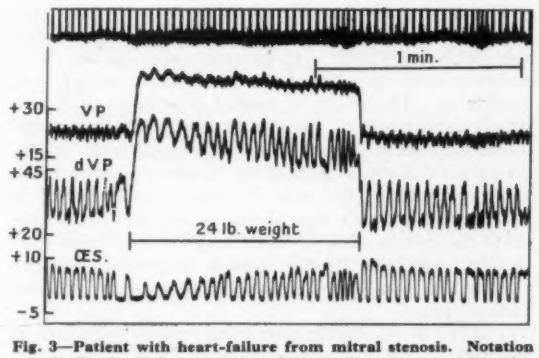

Fig. 3—Patient with heart-failure from mitral stenosis. Notation as in fig. 2. Reference point phlebostatic axis; anteroposterior diameter of chest 16 cm. (Artefact restricts troughs of œsophageal record.)

the response was similar. In a "false negative" result the rise in filling pressure was not reflected in a rise in venous pressure, because the intrathoracic pressure fell. There was, however, a gradation from the extreme example shown in fig. 3 to the normal response. In one patient, who had been orthopnœic and œdematous ten days previously, a normal filling pressure response followed treatment. In a patient with mitral and aortic stenosis and a normal venous pressure the abnormal hepatojugular reflux was almost entirely attributable to an accompanying rise in intrathoracic pressure and was therefore a "false positive". Curiously and inexplicably, the only occasion on which we recorded an abnormal rise in filling pressure with a normal resting venous pressure was in an athletic medical student.

The importance of the distinction between filling pressure and central venous pressure is emphasised by the records from a patient with pulmonary valvular

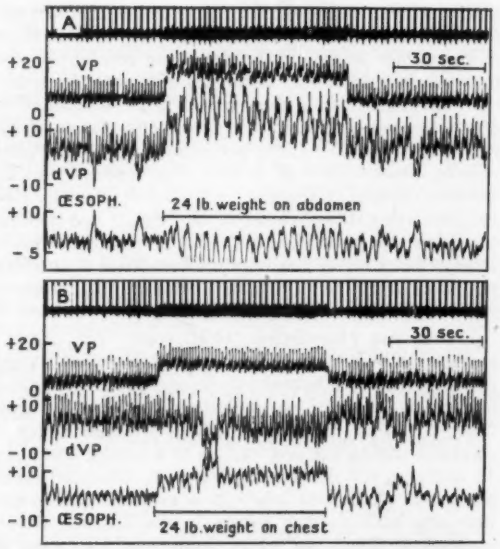

Fig. 4—Congenital pulmonary valvular stenosis. Notation as in fig. 2. Reference point sternoclavicular joint; anteroposterior diameter of chest 18 cm. (In B rise in œsophageal pressure, which lasts about 6 sec. during application of weight, is due to swallowing and produces negative artefact in differential pressure.)

stenosis (fig. 4). An almost identical rise in central venous pressure was obtained by applying the weight either to the abdomen or to the chest. In the first instance filling pressure rose; in the second the rise in central venous pressure was attributable to the rise in intrathoracic pressure, and the filling pressure fell. This observation can be repeated at the bedside. Most of the patients whose jugular venous pressure rises on the application of pressure to the abdomen show this also if similar compression is applied to the chest, if their breathing continues as normally as possible.

Asthma.—In 2 patients with asthma the application of the weight produced no appreciable changes in intrathoracic and central venous pressures. In these patients the changes in intrathoracic pressure with breathing was, of course, greater than normal.

Discussion

Pressure on the abdomen is one of the standard methods of increasing venous return (Landis and Hortenstine 1950) and is more convenient than exercise, raising the legs, releasing venous occlusion cuffs, while adopting the squatting position or after a Valsalva manœuvre. It has, however, numerous disadvantages. It is impossible to produce standard pressure with the hand, though Burch (1957) has described a device designed to overcome this objection. Even if the pressure is standardised, its effect would be modified by the resistance to the pressure and by differences in the abdominal venous capacity, both in one person on different occasions and between different persons. Even if the gross artefact which results from closure of the glottis and a modified Valsalva manœuvre is avoided by asking the patient to continue breathing normally, there is an important variation in the breathing response even in the same person on different occasions. The training effect already described might lead the physician to exaggerate the

efficacy of his treatment from day to day in a patient with cardiac failure. However, patients with cardiac failure, in an attempt to protect the liver from painful pressure, may continue to resist. Although one can infer that, if the patient is resisting the hand, it is the descent of the diaphragm which is mainly responsible for the resistance, it is impossible to achieve precision without the simultaneous measurement of at least 6 parameters, which is bound to eliminate the test from clinical practice. The test involves a measurement of the jugular and therefore central venous pressure at the bedside, whereas the proper interpretation of the test requires knowledge of the filling pressure—i.e., the difference between the pressures within and around the right atrium.

Landis and Hortenstine (1950) state " the effects of exercise on venous pressure in normal subjects suggests that the difference between them and patients with overt cardiac failure may be quantitative rather than qualitative ". The changes in filling pressure which we recorded during the test lead us to a similar conclusion. In addition, the disadvantages already described restrict the value of the test when it is most needed—i.e., in detecting early cardiac failure in the absence of other evidence. When the reflux, judged by its extent and duration, is clearly abnormal, there is usually more reliable evidence of cardiac failure. Some patients had a normal venous pressure after a recent diuresis. In such patients a large and sustained increment in venous pressure when the abdomen is compressed may indicate heart-failure.

However, when œdema is no longer present, the danger of using a positive hepatojugular reflux to diagnose cardiac failure of which there is no other evidence is emphasised by the findings in the medical student already cited. His venous pressure rose 9 cm. when a 24 lb. weight was applied to his abdomen, and 22 sec. elapsed before it returned to its resting level.

In patients with severe emphysema abdominal compression raises the intrathoracic pressure. This seldom happens in healthy people. The simultaneous rise in central venous pressure which results is often taken as evidence of cardiac failure. Such an inference is unjustified, because the rise in central venous pressure may be entirely attributable to the rise in intrathoracic pressure which results from the inability of the overexpanded chest to expand further and thereby compensate for the upward displacement of the diaphragm. In emphysema a positive hepatojugular reflux may be a more reliable indication that the emphysema is severe than that there is cardiac failure.

At present it is by no means universal to measure venous pressure by observation of the internal jugular pulse. It is unusual for this to be more than 2–3 cm. above the sternal angle in a healthy person. In one such person with a venous pressure of 8 cm. apprehension appeared to affect the central venous pressure in the same way that it is well known to affect the arterial blood-pressure. There is experimental support for the view that apprehension increases venomotor tone (Duggan et al. 1953). In our experiments we found that, with practice the clinical method showed good correlation with the direct method described. The accuracy of this method largely eliminates the need for the test of hepatojugular reflux.

Measurements of the venous pressure from the antecubital vein have shown normal figures to lie between 50 and 140 mm. of water above the phlebostatic axis (Winsor and Burch 1946). However, Pedersen (1952) has shown that there is a wide variation in the extent to which the pressure in an antecubital vein is higher than the central venous pressure.

It is a common experience of those who frequently use this method that the venous pressure may be 6 or 7 cm. when the external jugular veins are empty, and it is for this reason that this method proves more reliable in practice than the more widely known of Lewis' methods using the external jugular vein, investigated and favourably reviewed by Borst and Molhuysen (1952).

Lewis (1946) concluded that the hepatojugular reflux is " sometimes useful in estimating the amount of blood which is held in the abdomen and in helping to determine the size and position of the cervical veins ". Our conclusion is that the only certain value of the manœuvre is in distinguishing a venous from an arterial pulsation in the neck when this is difficult. When the internal jugular veins are being used as manometers, it is convenient to be able to raise the column so easily in establishing the normal resting level.

Summary and Conclusions

The mechanism of the hepatojugular reflux was investigated in healthy people, in patients with cardiac failure, and in patients with emphysema. The prime object was to assess the value of the test as an early sign of cardiac failure.

During the test the intra-abdominal pressure rose, and the intrathoracic pressure either rose, remained steady, or fell. In most of the patients with emphysema the intrathoracic pressure rose.

The filling pressure (the algebraic sum of the intrathoracic and central venous pressures) rose in all the subjects, being highest in those with cardiac failure. The variation from the normal was quantitative rather than qualitative. The effect on central venous pressure was largely determined by the simultaneous change in intrathoracic pressure. Since this was unpredictable, it was concluded that observation of the jugular venous pressure while performing the test of hepatojugular reflux is unreliable as an early sign of cardiac failure. In emphysema the intrathoracic pressure response was more predictable and the jugular venous pressure could be expected to rise, but this does not necessarily indicate cardiac failure.

The test is of value in identifying venous pulsations in the neck.

We are grateful to Dr. R. W. D. Turner for his cooperation; Dr. E. B. French and Dr. W. E. Medd for helpful criticism; colleagues, students, and patients who were the subjects under investigation; Mr. J. A. Ramsay, who made the differential manometer; and Miss Norma Millar for technical assistance. This research programme has been supported by a grant from the Scottish Hospitals Endowment Research Trust.

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DURATION OF NIGHT FEEDING IN INFANCY

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THE length of time that an infant on "demand feeding" requires to be fed at night is an important issue to the mother longing for an undisturbed night's rest.

In an attempt to answer this question the eight medical officers* in charge of infant-welfare centres in Area 2 of Middlesex County Council (Southgate, Wood Green, Friern Barnet, and Potters Bar) recorded the birthweight, place of birth, and method and hours of feeding of every infant aged up to about 6 months attending their centres.

"Demand feeding" is the accepted method of infant feeding throughout the area and is encouraged by all the medical officers and health visitors at the centres. In practice this means that the babies are fed about every three or four hours, but occasionally the intervals may be either shorter or longer according to the baby's demands.

Night feeding seems to stop fairly suddenly. Typically the baby sleeps through the night two or three times one week and next week or the week after no longer demands night feeds.

The mothers say that babies who have never had a night feed have slept through the night from about 10 or 11 P.M. until about 5 or 6 A.M. from birth.

The end of night feeding was reckoned from the age at which the baby went without one feed at night and so reduced by one the number of feeds it had in twenty-four hours.

The survey showed no significant difference between bottle-fed and breast-fed babies or between those born at home and in institutions. The important factor was birthweight. The accompanying table shows the relation between birthweight and duration of night feeding:

(1) In group A 9% and in group D 29% never had a night feed.

(2) In group A 27% and in group D 52% had ceased night feeds by the age of 4 weeks.

(3) In group A 62% and in group D 81% had ceased night feeds by the age of 2 months.

(4) In group A 91% and in group D 89% had ceased night feeds by the age of 3 months.

By the age of 3 months the birthweight had ceased to influence the issue.

RESULTS OF SURVEY

Group	Birthweight (lb.)	No. of babies	No night feed	None after 4 weeks	None after 2 mos.	None after 3 mos.	None after 4 mos.	Continued after 4 mos.
A	Less than 6½	55	5 (9%)	15 (27%)	34 (62%)	50 (91%)	51 (93%)	4 (7%)
B	6½–7	58	10 (17%)	24 (41%)	42 (72%)	50 (86%)	54 (93%)	4 (7%)
C	7–8	90	24 (27%)	45 (50%)	66 (73%)	80 (89%)	83 (92%)	7 (8%)
D	More than 8	63	18 (29%)	33 (52%)	51 (81%)	56 (89%)	59 (94%)	4 (6%)
	Total	266	57 (22%)	117 (44%)	193 (73%)	236 (89%)	247 (93%)	19 (7%)

I have drawn particular attention to the extreme groups A and D. It will be noted that groups B and C are entirely comparable.

I wish to thank Dr. Kenneth Soddy for his interest and help in the survey. The work was undertaken with the consent and approval of Dr. W. C. Harvey, the area medical officer, whom also I wish to thank. The Middlesex County Council takes no responsibility for any statements contained in this article.

* Dr. L. A. Crawford, Dr. M. C. Douglas, Dr. K. I. Kerr, Dr. N. T. O'Callaghan, Dr. E. S. Stephen, Dr. E. M. Waterhouse, Dr. J. White, and Dr. J. R. Campbell.

ALLERGIC SKIN RESPONSES ABOLISHED UNDER TREATMENT OF ASTHMA AND HAYFEVER BY HYPNOSIS

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THE successful relief of symptoms of various allergic conditions by hypnosis has been widely reported (Doswald and Kreiblich 1905, Asher 1956, Fry 1957, Kennedy 1957, Stewart 1957), but few details of laboratory control during treatment of this kind have been published. We therefore tested a patient's skin reactions to known allergens during the relief of associated allergic symptoms by hypnosis.

Case-report

A housewife, aged 27, with one son aged 4 years, complained of asthma and hayfever from May to July yearly, for twelve years. Her only previous illnesses were mumps and measles in childhood. Her brother had had asthma, and her son had infantile eczema during the first year of life.

In March, 1957, the patient described her condition as incapacitating between May and July. Prevented during these months from performing most of her normal duties as a housewife and mother, she became for this period of each year a "chronic invalid" subject to prolonged attacks of respiratory distress, which occurred mainly at night and left her nervous and often exhausted from lack of sleep. She would spend whole nights sitting up in a chair "gasping for breath". Even if during the daytime she had temporary relief from this severe respiratory embarrassment, she was, during these months, never without a "blocked nose" and "running eyes", with occasional itching round the eyes and long bouts of uncontrollable sneezing.

For ten years she had been unsuccessfully treated for these conditions with unidentified pills and inhalants and ephedrine gr. $^1/_3$ three-hourly, which she had taken fairly constantly from May to July every summer.

In the spring of 1956, however, in the eleventh year of her complaint, she was investigated for specific allergies by skin testing with the extracts of various common allergens marketed by C. L. Bencard Ltd. In this way she was found to be sensitive to pollens normally present in May, June, and July the equivalent extracts being designated by the manufacturers B2 (grasses), B3 (trees), and B8 (spring flowers). The effects on the patient were said to be due mostly to B2.

After these tests, and before the hayfever season of 1956, according to the history kindly supplied by the manufacturers, she was given "specific hyposensitisation treatment," by injection, and there was some relief of symptoms. The skin-test reactions during this period are described as persisting, and tested again in six months (in January, 1957) the patient was still fully sensitive. It was then suggested by the manufacturers that another course of hyposensitisation was indicated if she were to be helped again after May of that year. The patient, however, refused further treatment of this kind and was referred by her doctor for hypnosis.

Examination

In March, 1957, she was in good health, with pulse-rate 76, temperature 98°F, and respirations 20 a minute. Her blood-pressure was 120/90 mm. Hg. Her chest tended generally to a barrel shape, with an unduly obtuse costal angle and prominent costal cartilages, but its movements were full. On palpation and percussion nothing abnormal was discovered, but expiratory rhonchi were heard on auscultation anteriorly over the 3rd and 4th interspaces on both left and right sides, although no mention of any "asthmatic attack" had been made. The heart sounds were normal. Examination of the central nervous system revealed nothing abnormal except slight, but equal, exaggeration of both knee-jerks and failure to elicit ankle-jerks and plantar responses on both sides. The blood-picture, otherwise normal, showed a raised eosinophil-count of 10% of the total white-cell count.

Treatment

During the last part of March and the whole of April the patient attended weekly as an outpatient to prepare for hypnotic treatment of the asthma and hayfever by the induction of increasingly deep hypnotic trances. The method of induction used was the therapist's own modification of the Erickson-Wolberg "hypnosis by means of hand levitation" (Wolberg 1948).

The patient was a good hypnotic subject and responded quickly to the various routine suggestions by which deeper trances were achieved. By the end of April she could be put into a profound hypnotic trance in two or three minutes after lying down on the couch. A week before the usual date for the beginning of the patient's yearly attacks direct hypnotic suggestions were made for the first time about her symptoms. She was told that this year she would have neither asthma nor hayfever, the therapist concentrating largely on the symptoms previously described by the patient. She was told: "This year you will have no difficulty with your breathing, either at night or during the day time" and "This year you will not have a blocked nose, your eyes will not run, there will be no itching round your eyes, and you will not have sneezing attacks." Direct suggestions were also made about her sensitivity to pollens and other substances in the atmosphere, and she was told that now she would no longer respond to their presence with "the symptoms of asthma and hayfever."

It is important to note, however, that at no time was any mention made of the extracts of allergens to which she was known to be sensitive, or of any skin tests, or of the results of any such tests made either during this time or on previous occasions.

Result

Such treatment, lasting on each occasion up to thirty minutes, was given weekly from April 29 to July 8, and during the whole of this period the patient remained well and, according to her own account, was for the first time in twelve years at this season completely free from any of the symptoms of either asthma or hayfever. After a "cold in the head" contracted during the second week in June, she felt on the night of June 15 that "an attack of asthma might be coming on", and she therefore took ephedrine gr. $^1/_2$ and repeated the dose the next morning. No asthma developed, and this was the only pharmacological treatment for her usual complaint taken by the patient in the whole season, during which previously she had constantly taken drugs for eleven years.

Experimental Methods and Materials

To test the patient's skin reactions during this treatment, weekly skin tests were made with the commercial extracts of the three allergens to which she was known to be sensitive and a control. On each occasion the results were measured in terms of the areas of urticarial reaction in sq. mm. recorded fifteen minutes after testing.

To standardise the area of skin involved in each test an aluminium shield, curved to fit the flexor aspect of the patient's arm, was prepared with four holes, 2 mm. in diameter on the inside and countersunk on the outside. In the tests a separate hole was used for each extract and the control, and one drop, delivered by a single application of the plastic dipper supplied in each bottle of extract, was placed on the skin revealed by the hole in the shield (about 3 sq. mm.). Multiple pressure through the drop was then exerted ten times, without scratching, with a sterile hypodermic needle. A fresh needle was used for each allergen, and the different test sites were identified on the patient's arm by marking in ink with a ball-point pen, care being taken to avoid the test areas.

As a check on the effects of different degrees of pressure with the needle—obviously not fully standardised by this means—a comparison was made between the responses due to very light pressure and actual skin punctures made ten times through drops of the extract B2, to which the patient was known to be most sensitive. The results of different degrees of pressure over equal areas, assured by the aluminium shield, were about equal.

The control fluid, supplied by the manufacturers as allergically inert, was also tested. Ten pricks through this fluid, compared with identical treatment of a dry area, gave exactly the same "triple response" reaction (Lewis 1927) and no urticarial weal of any kind.

To record results a length of $1^1/_2$-in.-wide 'Sellotape' was placed over the line of test sites fifteen minutes after testing. The outlines of the areas of urticaria were then inked with a ball-point pen on the sellotape, which was afterwards removed.

To estimate the area involved in each test response and to make accurate comparisons, the outlines on sellotape were subsequently transferred in the laboratory on to lead foil (taken conveniently from the back of old dental X-ray films). These areas of lead foil were then cut out with scissors and a scalpel, and the resulting pieces were weighed. Since 1 sq. cm. of this foil weighed 36 mg., the area of each urticarial weal could be calculated. The uniform thickness of the foil used was checked by weighing equal areas cut at random from different parts, and any variation was estimated to be within the limits of experimental error involved and was not significant.

The tests were usually made on the flexor aspect of the patient's left arm, with a preliminary test before treatment on the first occasion on April 29, but after treatment on subsequent occasions up to nine weeks. At weeks 4, 5, 8, and 9 unexpected tests were also made on the left leg, the aluminium shield being applied to the medial aspect of the thigh. At the 10th week the test was made before treatment, and at the same time blood was taken by venepuncture in order to estimate the Prausnitz-Küstner reaction (Prausnitz and Küstner 1921) in a non-allergic volunteer.

Results

At the beginning of the course of treatment the patient responded to the allergens B2, B3, and B8 but not significantly to the control. She was most responsive to the extract B2 (grasses), an urticarial weal developing in fifteen minutes to 361 sq. mm., compared with 72 sq. mm. for B3 (trees) and 50 sq. mm. for B8 (spring flowers). The response to the control on this occasion was 33 sq. mm. of erythema without any evidence of a true urticarial weal such as attended every response to the allergen extracts.

Tested after treatment during the following weeks, however, the reactions on the left arm seemed to reflect the improved condition of the patient's health, the skin responses to all three extracts decreasing steadily each

TABLE I—ALLERGIC SKIN RESPONSES DURING HYPNOTIC TREATMENT SHOWING AREAS OF URTICARIA IN SQ. MM.

Extract, site of test	Tested before treatment	Tested after treatment and direct suggestion re complaint										Tested before treatment
	Week								9		10	
	1	2	3	4	5	6	7	8	Direct suggestion re skin tests			Blood taken for P-K reaction
B2:												
Left arm	361	73	139	142	55	47	0	0		0	0	
Left leg	..	..	..	622	458	..	..	556		0	..	
B3:												
Left arm	72	58	33	0	0	38	0	0		0	0	
Left leg	..	..	..	..	..	..	..	..		0	..	
B8:												
Left arm	50	28	25	0	0	28	0	0		0	0	
Left leg	..	..	..	944	..	..	..	611		0	..	
Control:												
Left arm	(*33*)	(*22*)	0	0	0	0	0	0		0	0	
Left leg	..	..	..	0	..	..	..	0		0	..	

week and reaching zero together for the first time after the seventh treatment; but these results did not apply to the occasional unexpected tests on the left leg, which at weeks 4, 5, and 8 gave wide areas of urticarial response, in spite of what was happening to the left arm.

At the 9th week, therefore, the procedure was changed and, while the patient was in the hypnotic trance, an additional and direct suggestion was made that, apart from the general improvement in her health, her skin would afterwards be unresponsive to tests with the three extracts anywhere on her body. Tested immediately on waking there was no urticarial reaction at all to any of the extracts or the control, on either arm or leg.

With the patient now consistently free from both asthma and hayfever, and from any skin responses when tested with the known allergens, an attempt was made to elicit the Prausnitz-Küstner reaction in a non-allergic volunteer. At the 10th week of treatment, therefore, the patient was skin-tested before treatment and found to be still completely unresponsive to all three extracts and the control. Blood was then taken by venepuncture and serum extracted by centrifuge. About 0·1 ml. volumes of this

TABLE II—PRAUSNITZ-KÜSTNER REACTION IN VOLUNTEER

Extract	Prausnitz-Küstner reaction (sq. mm.)	
	Left arm	Right arm
B2	0	69
B3	0	36
B8	0	0
Control	0	0

serum were then injected intradermally at four points on the flexor aspect of the volunteer's right arm.

The volunteer was next skin tested on the left arm with the three allergen extracts (B2, B3, and B8) and the control, and readings were taken in the usual way after fifteen minutes. There was no reaction. At thirty minutes after the intradermal injection of the patient's serum, further skin tests were made over the injection sites on the volunteer's right arm with the same allergen extracts (B2, B3, and B8) and the control. Whereas there was now no response to the control or to B8, urticarial weals appeared at the sites of application of B3 (36 sq. mm.) and B2 (69 sq. mm.) and remained present for twenty-four hours.

These results are shown in tables I and II.

Discussion

An allergic causation of the patient's asthma and hayfever had been previously established and, in spite of fairly successful hyposensitisation the year before, she was still sensitive to extracts of the three known allergens. She was now treated by direct suggestion under hypnosis, and for the first time in twelve years she was completely free from the symptoms of her yearly illness. After each weekly hypnotic treatment during this time she was skin-tested on the left arm with the allergen extracts involved, and the responses to these decreased over 7 weeks to zero.

But the left arm—the routine testing site—was apparently associated at a cerebral level with the relief of symptoms, for periodic unexpected tests on the left leg showed no significant change in the urticarial reaction, which was considerable. When, however, the direct suggestion was made that the patient's skin everywhere would be unresponsive to the three allergens, there was no response in either arm or leg. Nevertheless, with the patient now free from both symptoms and skin reaction, it was still possible to produce the Prausnitz-Küstner reaction in the skin of a volunteer normally insensitive to the allergens.

Thus the symptoms of the physical illness had been relieved by psychological treatment, although the patient's blood still contained the serological basis of her previous hypersensitivity in the form of passively transferable antibodies or atopic reagins (Coca and Grove 1925). By direct suggestion under hypnosis, it had been possible to establish an overriding psychic system of control, which could not only keep the patient well, but could also inhibit selectively the allergic or atopic reaction in different parts of her body. Although presumably central in origin, this control system, because of its powers of selectivity, might be assumed to act peripherally—possibly at some stage in the local process initiating the *release* of histamine, or other endogenous smooth-muscle stimulants such as acetylcholine or 5-hydroxytryptamine (Lewis 1927, Humphrey and Jaques 1954). Inhibition of tissue *response* to these substances is an alternative explanation. In either case, neural rather than humoral communication seems to be implied.

Laboratory control thus produced results which supported the general clinical observation that three factors may be involved in the ætiology of asthma and hayfever: foreign proteins, sensitised tissues, and a psychogenic factor in no way understood. In the present case at least the psychogenic element was further shown to be the most powerful of these three, possibly explaining why psychological treatment in the form of suggestion under hypnosis had provided complete relief from symptoms, where other methods of treatment had proved only partially successful.

Summary

A patient with a long history of allergic asthma and hayfever was relieved of her symptoms by hypnotic treatment. Weekly skin tests showed her decreasing sensitivity to the known allergens. When finally the patient had no symptoms or skin reactions, intradermal injection of her serum into a non-allergic volunteer made it possible to demonstrate the passive transfer of the skin sensitivity to the original allergens. (Prausnitz-Küstner reaction.)

We wish to thank Dr. A. Spencer Paterson for his encouragement and for the facilities granted in the Psychiatric Department of the West London Hospital.

References overleaf

AUTOIMMUNISATION IN SUBACUTE THYROIDITIS

ASSOCIATED WITH EVIDENCE OF INFECTION BY MUMPS VIRUS

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SUBACUTE thyroiditis was first described as a clinical entity by de Quervain (1904). The original description was confirmed and amplified by de Quervain and Giordanengo (1936), but subacute thyroiditis has, until the past few years, been considered rare. The recent increase in frequency of reported cases is probably partly due to more general recognition of its characteristic symptoms and signs and partly to the use of newer aids to diagnosis such as radioiodine and needle biopsy of the thyroid gland. There may also be a true increase in incidence as shown by the reports from the Cleveland Clinic, where 27 cases were diagnosed in 1936–45 and 38 cases in 1946–49 (Crile and Rumsey 1950).

For several years subacute thyroiditis has been suspected to be due to a virus (Crile 1948, Fraser and Harrison 1952), but this remained hypothetical until the mumps virus was incriminated in cases reported from Israel (Eylan et al. 1957). A positive complement-fixation test using Lederle mumps viral antigen was found for mumps virus in 10 of 11 cases; in 2 the virus was cultured from the thyroid tissue. The findings only applied to that particular outbreak, which coincided with an increased incidence of classical mumps. The same virus has been incriminated in the case of subacute thyroiditis reported here, which apparently complicated primary thyrotoxicosis.

A further feature was the development of antibodies to extract of human thyroid similar to that recently found by Roitt et al. (1956) in Hashimoto's thyroiditis. This production of anti-thyroid antibodies is of considerabe theoretical interest in that it was in the present patient a temporary phenomenon which later regressed spontaneously.

Methods

Radioiodine studies were made with ^{131}I 15 μC, the amounts taken up by the thyroid gland being determined at 24, 48, and 72 hours.

Hæmagglutination-inhibition tests for mumps-virus antibody were made by Dr. George Belyavin, of University College Hospital, using Enders strain mumps-virus antigen.

The antibody titre of the patient's serum against thyroid hormone was estimated by Dr. Deborah Doniach and Dr. I. M. Roitt by a modified Oudin technique using as antigen "purified" thyroglobulin 5 mg. per ml. Similar tests were made by me using as antigen pooled saline extracts obtained from thyroid glands removed post mortem. No significant differences in antibody titre were obtained with the two antigen preparations.

Complement-fixation tests were made using as antigen the same saline extract of pooled post-mortem thyroid glands. 0·25 ml. of the patient's serum was inactivated and incubated at 37°C for half an hour with 0·25 ml. of antigen and three hæmolytic doses of guinea-pig complement. 0·25 ml. of a hæmolytic system containing 3% sensitised sheep cells was added, and the tubes were examined for lysis after a further hour's incubation at 37°C. Both the antigen and the serum were put up in several dilutions.

The serum-gammaglobulin was estimated by paper electrophoresis (Hardwicke 1954).

Case-report

A housewife, aged 43, was first thought to be unwell in March, 1956, by her family, who observed restlessness and prominent eyes. In June, 1956, she began to feel ill and to lose weight and noticed that her eyes had become sore and seemed to protrude. She became emotionally more labile and subject to mild depression. In mid-October, 12 days before admission, stiffness and soreness of her neck muscles developed, and a transient rash appeared on her chin. Her throat became sore, and she became increasingly pyrexial, her illness then being diagnosed as primary thyrotoxicosis complicated by pharyngitis. Despite treatment with aspirin and sulphadiazine the malaise, pyrexia, and soreness of her throat and neck muscles increased, and she was admitted on Oct. 24, 1956, having lost 28 lb. in weight in 6 months. She had not had any abdominal pain or tenderness or swelling of her salivary glands.

Previous history.—She had undergone tonsillectomy at the ages of 4 years and 12 years. She had never had mumps. There had been an increased incidence of mumps in the local schools over the 6 months before her admission to hospital.

Family history.—There was no recent infectious fever in the family. Her two children, aged 10 years and 13, had had classical mumps several years previously. A brother with primary hypothyroidism had been maintained on thyroid extract since infancy. No anti-thyroid antibodies were found in his serum by the precipitin technique or the tanned red-cell agglutination technique (D. Doniach, personal communication).

On examination the patient looked ill and was restless and agitated. Her skin was hot and moist. She had pyrexia (99°–102°F) and tachycardia (120), obvious eyelid retraction, some exopthalmos, and a fine tremor of her outstretched hands. Her pharynx was not inflamed. She had a flush over the lower part of her neck and extending to the upper part of her chest, and her skin was warm and hyperæmic. Her thyroid gland was tender, both lobes being enlarged, the left more than the right, and the gland felt tense and locally adherent. It was estimated to be about twice the normal size. No thyroid bruit was audible. A small firm non-tender lymph-node lay above the thyroid isthmus, and there were also several small nodes in the posterior triangles of the neck. There were no other abnormal signs.

Treatment and progress.—The patient received no specific treatment apart from mild sedation and intramuscular soluble penicillin G 1,000,000 units twice daily for three days. Her malaise rapidly decreased and her temperature and pulse-rate fell to normal within a week. Her thyroid gland became less tender and less tense though it was still enlarged. Initially the left lobe had been the more affected; but, as this lobe improved, the right lobe became larger and more tender.

Initial investigations.—Hb 11·9 g. per 100 ml.; white cells 7000 cm. (normal differential count); erythrocyte-sedimentation rate 24 mm. in 1st hour (Wintrobe). Chest radiography was normal except for slight lateral compression of the trachea. There was moderate proteinuria for the first three days, but the urinary sediment was normal. The uptake of radioiodine on the 8th day was 2·7% at 24 hours, decreasing to 1·2% at 48 hours. The basal metabolic rate on Nov. 8, 1956, 10 days after the remission of pyrexia was +16%.

Autoimmunisation.—Circulating antibodies to human thyroid extract were found on Nov. 11, 1956, at titre of 1:2 of serum.

Evidence of mumps infection.—A positive hæmagglutination-inhibition test for mumps virus was found to a titre of 1:320 of serum on Nov. 11, 1956, decreasing to 1:80 after 26 days, and to 1:40 after a further 31 days.

Thyroid biopsy.—Biopsy of the isthmus (Mr. V. Brookes) on Nov. 5, 1956, showed that the thyroid gland was bound to

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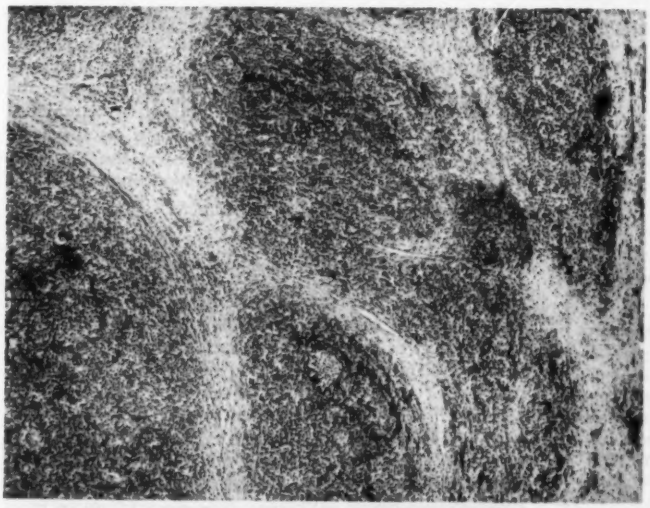

Fig. 1—Section of thyroid gland showing interlacing bands of acellular fibrous tissue surrounding areas of surviving parenchyma with heavy cellular infiltration. (Hæmatoxylin and eosin. ×30.)

the surrounding tissues by adhesions, but not to the extent usually seen in Riedel's chronic thyroiditis. The gland felt hard, its surface irregular, and the cut surface extremely firm. Histological examination (Dr. D. B. Brewer) showed (figs. 1 and 2) the thyroid divided up into demarcated lobules by bands of dense acellular fibrous tissue. The lobules, in contrast to these bands of fibrous tissue, were very cellular and consisted of small acini closely applied to one another. The outlines of the acini were obscured by a heavy cellular infiltration which was both intra-acinar and interacinar. The cells consisted of polymorphs, lymphocytes, and plasma cells, but large intra-acinar giant cells were also present. No lymphoid follicles were seen. The picture was that of a fairly chronic stage of giant-cell thyroiditis.

Further progress.—The patient was symptom-free on discharge. Her thyroid gland was slightly tender, the right lobe being enlarged and the whole gland easily palpable because of its firm consistence. The surrounding lymph-nodes had become smaller. Slight exophthalmos and lid retraction were still present. Serial studies were made of the clinical state and thyroid function, and of the changing titre of antibodies to thyroid extract over the following 11 months (table and fig. 3). The patient began to put on weight, and clinical evidence of thyrotoxicosis disappeared except slight lid retraction. The thyroid gland remained firm, with a slightly enlarged right lobe. The circulating thyroid antibody titre increased over 3 months to 1:16 and then decreased progressively to 1:4. The antibodies were also demonstrated by complement fixation to a titre of 1:40 on Jan. 1, 1957, and to a titre of 1:30 on March 21, 1957. Serial serum flocculation tests showed an abnormality which could be correlated with the level of the serum gammaglobulin and the titre of anti-thyroid antibodies (see table). The uptake of radioiodine increased slowly but steadily from 2·7% in 24 hours on admission to 57·9% in 24 hours on Sept. 18, 1957. The turnover remained rapid, and on Sept. 18, 1957, the uptake in 72 hours had decreased to only 38%, equivalent to a half-life of 3·7 days. The basal metabolic rate fell to normal after 3 weeks and has since remained in the normal range, though showing a tendency towards increase (table and fig. 3).

RELATIONSHIP OF TITRE OF ANTI-THYROGLOBULIN ANTIBODY TO SERUM GAMMAGLOBULIN, FLOCCULATION TESTS, AND UPTAKE OF RADIOIODINE DURING COURSE OF ILLNESS

Date	Thyro-globulin pre-cipitin titre	Gamma globulin (g. per 100 ml.)	Flocculation tests (units)		% radioiodine uptake at		
			Thymol turbidity	Zinc sulphate turbidity	24 hr.	48 hr.	72 hr.
Nov. 1, 1956	—	—	—	—	2·7	1·2	—
„ 11 „	1:2	—	2	7	15·9	—	—
Dec. 5 „	1:4	1·6	2	11	18·1	16·7	—
Jan. 5, 1957	1:16	2·2	7	18	31·0	20·0	14·1
Feb. 5 „	—	—	—	—	39·1	—	22·5
Mar. 21 „	1:8	2·2	4	14	—	—	—
April 25 „	—	—	—	—	47·0	—	29·8
May 24 „	1:4	1·9	—	—	—	—	—
Sept. 18 „	1:4 (weak)	1·5	3	7	57·9	—	38·0

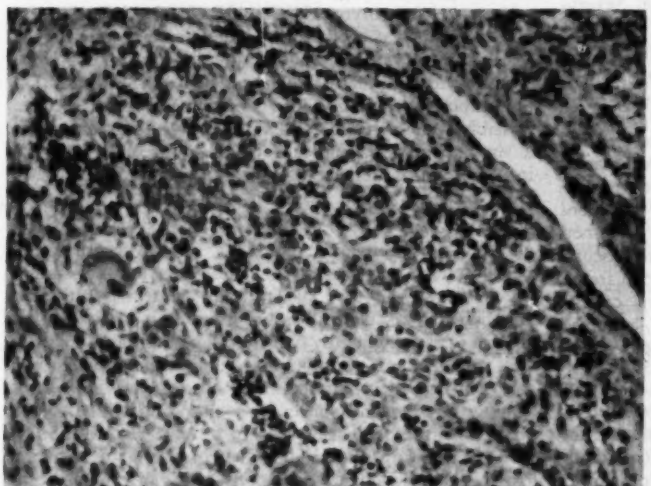

Fig. 2—Part of a nodule of surviving parenchyma showing heavy lymphocytic and plasma-cell infiltration and one large multi-nucleate giant cell. (Hæmatoxylin and eosin. ×200.)

Discussion

Diagnosis of Subacute Thyroiditis

The subacute thyroiditis followed a typical course in this patient, with a gradual onset, when pharyngitis was suspected, and later the development of toxæmia, high pyrexia and tenderness of the thyroid gland. The tendency for the thyroiditis to affect one lobe and then to subside slowly there but to flare up in the other lobe is well recognised and has led to the name "creeping thyroiditis". Crile and Rumsey (1950) have found that, when the pain, swelling, and tenderness are still confined to one lobe, the uptake of radioiodine may be much depressed, showing that the whole gland is involved.

Thyrotoxic symptoms are often present during the acute stage, but the malaise and toxæmia are usually more severe than the degree of thyrotoxicosis would lead one to expect. The duration of subacute thyroiditis has varied in different series; though cases have been reported in which the thyroid gland was tender for more than

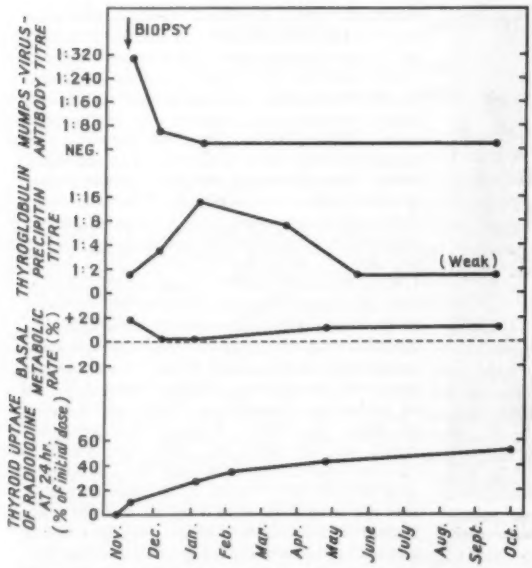

Fig. 3—Changes in basal metabolic rate, % radioiodine uptake at 24 hours, titre of mumps-virus antibody, and titre of anti-thyroglobulin precipitin from onset of subacute thyroiditis.

a year (Lindsay and Dailey 1954, Stalker and Walther 1951), the duration of acute tenderness for about $2^1/_2$ weeks followed by its gradual decrease over a further 6 weeks, as in the present case, is more usual. The clinical diagnosis in this case was confirmed by the histological appearances in the biopsy specimen.

Thyrotoxicosis and Thyroiditis

The patient had symptoms and signs of hyperthyroidism for at least 7 months before the acute phase; this suggests primary thyrotoxicosis rather than the insidious onset of thyrotoxic symptoms due to thyroiditis. The radioiodine studies after recovery point to a return of this hyperthyroidism. Subacute thyroiditis has been followed by thyrotoxicosis within weeks or months on several occasions (Sheets 1955, Perloff 1956), but the history of preceding thyrotoxic symptoms makes it unnecessary to invoke this explanation in the present case. Most patients have normal thyroid function after subacute thyroiditis. 10 patients followed by Eylan et al. (1957) became euthyroid, with a normal uptake of radioiodine, within 6 months and remained euthyroid; this series is particularly valuable for comparison because the thyroiditis was proved to be associated with mumps infection. Despite the large number of cases of thyroiditis published to date an association with pre-existing thyrotoxicosis has not been traced. Lindsay and Dailey (1954) found no association with any pre-existing disease of the thyroid gland, but Volpe and Johnston (1957) reported 6 cases which followed a simple non-toxic goitre.

Evidence for Mumps as Causal Agent

The high level of mumps-virus antibody found by Dr. Belyavin during the acute stage of thyroiditis and the fall in titre over the next few months suggested that the thyroiditis was due to mumps virus. The possibility of an anamnestic increase in complement-fixing antibody was investigated by Eylan et al. (1957) when they first reported their epidemic of subacute thyroiditis, but no such increase was found in other acute fevers. The hæmagglutination-inhibition tests made in the present case are probably a more specific index of mumps infection than is the test with complement-fixing antigens, and strongly suggest that the patient had active mumps at the time of the thyroiditis. The increased incidence of classical mumps in the local schools over the 6 months before the acute thyroid symptoms is of interest.

Autoimmunisation and Thyroid Gland

The finding of antibodies to "purified" human thyroglobulin (less than 95% pure) in many cases of Hashimoto's thyroiditis by Roitt et al. (1956) has helped to clarify our understanding of the pathological pattern in that disease and has provided a valuable stimulus to investigators of other types of thyroiditis.

The precipitin technique is at present the most valuable method of detecting the antibody but it is not very sensitive. The agglutination of tanned red cells coated with antigen, a method used by Prof. E. Witebsky, is extremely sensitive but more difficult and laborious. Complement-fixation tests have not yet been fully assessed. Complement-fixing antibodies have been found in most cases of Hashimoto's thyroiditis, many cases of spontaneous myxœdema, occasionally in thyrotoxicosis, and rarely in healthy people.

Anderson et al (1957) have followed up these positive complement-fixation tests in apparently "normal" hospital inpatients by post-mortem examination of the thyroid gland where possible, and observed changes which appear similar to, but less pronounced than, the changes of Hashimoto's disease, with lymphocytic infiltration, formation of lymph follicles, and loss of many thyroid acini.

The finding by Anderson et al. (1957) of histological abnormalities in the thyroid glands of "normal" patients with positive complement-fixation tests is of particular interest in view of Thomson's (1957) work on thyroid histology. He found areas suggesting an "immunological reaction pattern" in operation specimens of sporadic goitre, thyrotoxic thyroid glands, and one carcinomatous thyroid gland. Various insults to the thyroid gland seem able to cause damage to the acini and to release thyroglobulin. Probably infection by mumps virus was the insult in the present case, and it is reasonable to wonder whether the severe infiltration by lymphocytes and plasma cells may be a further indication of antibody production and of local immune reaction. Possibly some cases of Hashimoto's thyroiditis may have a similar precipitating cause, and the search for viral infection will doubtless be intensified in the future.

Transcience of Autoimmunity

The Lancet (1957) suggests that the antigen-antibody reaction once initiated might become self-perpetuating, but the present case shows that this is not inevitable. The titre of antibody decreased although the patient was clinically euthyroid with an increasing uptake of radioiodine by his thyroid gland. This suggests that the leak of thyroglobulin had been stopped, and possibly indicates that the viral infection was no longer damaging the acina epithelium—a finding which would fit in with the decreasing titre of mumps-virus antibody. It is fascinating to speculate whether total destruction of the thyroid gland and consequent myxœdema, as in Hashimoto's thyroiditis, could occur in thyroid glands with smaller residual powers of recuperation. The incidence of a complicating autoimmunisation in subacute

thyroiditis is unknown. We have examined 3 further cases of subacute thyroiditis with a positive mumps-virus hæmagglutination test.

In 1 a weak antibody titre (1:2) to thyroid extract was found 2 months after the onset of thyroid enlargement; this case is of particular interest because of the absence of thyroid tenderness, the only subjective symptom being slight aching in the neck radiating to below the right ear. The uptake of radioiodine was 36% of the total dose at 24 hours despite clinical evidence of thyrotoxicity and a basal metabolic rate of +49%.

The 2 other cases were seen 6 and 8 months after the acute stage; no antibodies were detected by the precipitin technique.

In the 56 patients described by Volpe and Johnston (1957) no residual permanent hypothyroidism was found, suggesting that if autoimmunisation has developed it had not caused progressive damage to the thyroid gland.

Summary

A case of subacute thyroiditis is described which apparently complicated primary thyrotoxicosis.

A positive hæmagglutination-inhibition test for mumps-virus antibody in a high titre during the acute stage and decreasing later suggested that the thyroiditis was due to mumps virus.

Autoimmunisation to "purified" human thyroglobulin took place after the acute stage and reached a peak 3 months later, after which the amount of circulating antibody gradually decreased.

I wish to thank Dr. C. F. Hawkins for permission to publish; Prof. J. R. Squire for much valuable advice and facilities for immunological work; Mr. W. H. Bond for the radioiodine studies; Dr. D. B. Brewer for help with the histology; Dr. G. Belyavin for permission to use his figures on mumps viral antibody titres; and Dr. D. Doniach, of the Middlesex Hospital Institute for Clinical Research, London, for the initial immunological investigations and much valuable information.

ADDENDUM

This patient is mentioned by I. M. Roitt and D. Doniach in a table about thyroglobulin precipitin reactions in other thyroid diseases (*Proc. R. Soc. Med.* 1957, **50,** 960). Further follow-up studies in February, 1958, show that antithyroid antibodies are now detectable only in undiluted serum.

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"Dr. Wilks said he could not speak too strongly in denunciation of the old fashion, the plan of treating hysteria by physic instead of by moral [psychotherapeutic] means, a plan which was known to be useless, and was yet followed as a matter of routine. He had, he said, often reflected with surprise upon a remark made by so intelligent a man as the late Dr. James Johnson, who, when called to visit a girl who had been in bed with various hysterical affections for five years, and who had been drenched with gallons of physic, inquired if every 'stinking thing' in the Pharmacopœia had been given her, and when answered in the affirmative, declared he could do no more."—Sir Samuel Wilks. *Lectures on Diseases of the Nervous System.* 2nd ed. London, 1883; p. 464.

INTERMITTENT HYPERPARATHYROIDISM

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HYPERPARATHYROIDISM should be suspected in any patient with recurrent renal calculi (Albright and Reifenstein 1948, Richardson 1953). This article describes a patient with such a history, and from whom a parathyroid adenoma was subsequently removed; the preoperative biochemical results showed that the adenoma was only intermittently overactive.

Case-report

A woman, aged 50, attended the outpatient department in April, 1956, having had an attack of renal colic 5 days previously; she had no other urinary symptoms. In 1946 she first had left-sided renal colic; this recurred on and off till 1948, when a left pyelolithotomy was performed. In 1951 she underwent left nephrectomy because of stones, and in 1953 she had a right pyelolithotomy.

There were no abnormal physical signs on examination; her blood-pressure was 120/80 mm. Hg. An intravenous pyelogram (I.V.P.) showed compensatory hyperplasia of the right renal outline: excretion was first seen at 5 minutes, and there was dilatation of the calyceal system; in the lower minor calyx there was a moderate-sized calculus and several minute calculi. The urine was sterile on culture.

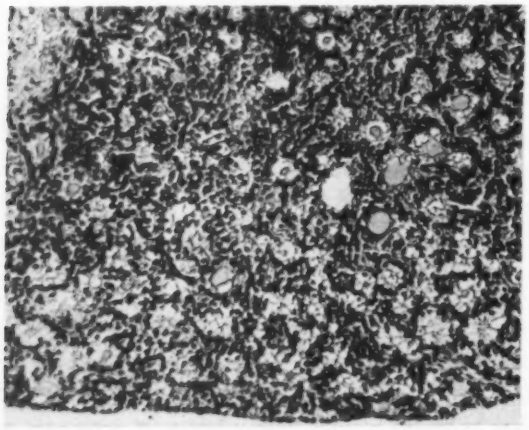
She was admitted to hospital on Sept. 7 under the care of Mr. C. J. B. Murray, for investigations before the removal of the renal calculus. She had had no more attacks of colic. An I.V.P. showed that the main calculus had become larger. Her hæmoglobin was 74% packed-cell volume 35%, erythrocyte-sedimentation rate (E.S.R.) (Wintrobe) 10 mm. in the first hour, and leucocyte-count 6400 per c.mm. with a normal differential count. The results of biochemical tests are given below.

On Sept. 30 she had another attack of renal colic, and metabolic investigations were interrupted. A retrograde pyelogram on Oct. 2 showed that the right renal pelvis contained 60 ml. urine, and that the large renal calculus had moved to the upper part of the ureter. On Oct. 5 Mr. E. W. Riches performed a right pyelolithotomy and partial nephrectomy; the lower pole of the kidney was amputated because it was known to contain minute calculi, one of which could be felt but not dislodged at operation. After operation the patient was anuric until Oct. 10 (blood-urea 141 mg. per 100 ml.). During the anuric phase she was treated partly by intragastric drip and partly by intravenous fluids. Urine started to drain on Oct. 10, and a urinary fistula developed on Oct. 11; the fistula had closed spontaneously by Oct. 17. At no time during the anuric or diuretic phases were the patient's serum-electrolyte levels seriously deranged, and they had returned to normal limits by Oct. 17.

Histological examination of the kidney revealed active chronic inflammatory changes in the calyces with increased submucous fibrosis, and focal inflammatory areas in the renal parenchyma in which there were scanty spherical deposits of calcium.

Biochemical tests were resumed at the end of October, and further tests were made when she was readmitted to hospital in November after a period of convalescence. The results of these tests are presented in the next section.

Mr. C. J. B. Murray explored the patient's neck on Nov. 28. The biochemical data did not allow of a firm preoperative diagnosis of hyperparathyroidism, and there was no X-ray evidence to suggest the diagnosis; many alternative diagnoses had, however, been excluded, such as sarcoidosis and multiple myeloma. At operation the left and right superior parathyroid glands were removed; the left gland was bilobed, measuring $2 \times 1{\cdot}2 \times 1{\cdot}2$ cm., and the right was approximately spherical (diameter, 0·6 cm.). Her postoperative course was uneventful, with only mild temporary asymptomatic hypocalcæmia.



Periphery of the parathyroid adenoma; both clear cells and oxyphil cells are visible (× 120).

Sections of the left superior parathyroid gland showed replacement by an encapsulated adenoma composed of both clear and oxyphil cells; the proportions of the cellular components varied in different areas, and the clear cells tended to be arranged in an alveolar pattern (see fig.); the tumour cells were regular in configuration and there was no histological evidence of malignancy. The right superior parathyroid gland was histologically normal.

The patient was discharged on Dec. 7, and an I.V.P. on Dec. 28 showed that the right kidney was excreting well. She was last seen on Oct. 11, 1957; at that time her blood-pressure was 130/80 mm. Hg, and a plain radiograph of her abdomen did not reveal any renal calculi.

RESULTS OF BIOCHEMICAL INVESTIGATIONS

Period	Date	Blood-urea (mg. per 100 ml.)	Serum-calcium (mg. per 100 ml.)	Plasma phos-phate (mg. per 100 ml.)	Urine volume (ml. per 24 hr.)	Calcium excre-tion in urine (mg. per 24 hr.)	Mean urinary calcium concen-tration (mg. per 100 ml.)
1	1956 Sept. 7	33					
	,, 12		12·4				
	,, 21		12·0	1·4	1290	265	20·5
	Oct. 4	40					
2	Oct. 17	57					
	,, 28				1495	275	18·4
	,, 29	29 (F)	9·8 (F)	2·1 (F)	2500	482	19·3
3	Nov. 21		11·4 (F)	2·9 (F)	2100	225	10·7
	,, 22	38		3·5			
	,, 23				2320	258	11·1
	,, 24				2400	298	12·4
	,, 26		12·2 (F)	2·1 (F)	2290	273	11·9
	,, 27				2145	272	12·6
4	Dec. 4 1957		10·0		1810	120	6·6
	Mar. 1	39	9·8	2·3			
	Oct. 11	27	9·3	2·9			

The table is divided by horizontal lines into four subsections:

1. Before pyelolithotomy and partial nephrectomy (performed Oct. 5, 1956).
2. After recovery from the anuric episode.
3. Before parathyroidectomy (performed Nov. 28, 1956).
4. After parathyroidectomy.

The blood samples were not all taken at the same time of day. Figures with F in parenthesis were obtained on samples taken at 8 A.M., after the patient had fasted overnight; other blood samples in hospital were taken 2 hours after breakfast.

Urine collections were begun at 8 A.M. on the dates indicated and continued for 24 hours. The urinary calcium concentrations are overall average figures for each 24-hour period.

A calcium-infusion test was performed on Oct. 29. 1956; the infusion started at 9 A.M.

Biochemical Investigations

Calcium in serum and urine was estimated by the method of Kramer and Tisdall (1921, 1923). Inorganic phosphate in plasma and urine was estimated by the method of Kuttner and Lichtenstein (1930).

The normal range for serum-calcium is 9–11 mg. and for plasma-phosphate 2·5–4·5 mg. per 100 ml. The normal urinary excretion of calcium is found to be 100–300 mg. per 24 hours at this hospital (see also Nabarro 1954); Dent and Hodson (1954) give 120–220 mg. per 24 hours as the normal range of urinary calcium excretion, whereas Pyrah (1956) accepts up to 350 mg. per 24 hours as normal. The normal urinary excretion of phosphorus is 0·5–1·5 g. per 24 hours.

Many of the results are collected in the accompanying table, which is divided by horizontal lines to correspond with the following four subsections:

1. *September, 1956: before pyelolithotomy and partial nephrectomy.*—A diagnosis of hyperparathyroidism was indicated by the observation of raised serum-calcium and lowered plasma-phosphate levels. However, the urinary calcium excretion on an ordinary diet was 265 mg. per 24 hours and, after equilibration on a diet containing 120 mg. of calcium per 24 hours, the urinary calcium excretion fell to 159 mg. per 24 hours. Both of these results are within normal limits (Nabarro 1954), though Pyrah (1956) holds that on a low calcium intake a daily urinary calcium excretion of 150–200 mg. per 24 hours is suggestive of hyperparathyroidism. The urinary phosphorus excretion was 486 mg. per 24 hours and the serum-alkaline-phosphatase was 6·6 King-Armstrong (K-A) units per 100 ml. At this time the blood-urea was normal.

2. *October, 1956: after recovery from the anuric episode.*—On Oct. 29 a calcium-infusion test was performed (Howard et al. 1953); the load of intravenous calcium was 20 mg. per kg. body-weight. On that day the blood-urea was 29 mg. per 100 ml., and the serum-electrolytes were: sodium 139, potassium 4·1, chloride 99, alkali reserve 27 mEq. per litre (all within normal limits).

In the control period before the infusion the patient passed 1495 ml. of urine, containing 275 mg. of calcium and 482 mg. of phosphorus; in the test period these figures were 2500 ml., 482 mg., and 283 mg. respectively. At the start of the infusion the serum-calcium was 9·8 mg. and the plasma-phosphate was 2·1 mg. per 100 ml. At the end of the infusion the plasma-phosphate was 2·5 mg. per 100 ml., and it continued to rise, to 2·9 and 3·4 mg ($\pm$0·1 mg.) at 4 and 8 hours respectively after the end of the infusion. The patient vomited once (150 ml.) soon after the infusion ceased. The response to this test was similar to that described by Howard et al. (1953) for normal people.

The results of tests in this subsection indicated that the patient's metabolism of calcium and phosphorus was normal; the most significant of these normal results was the serum-calcium of 9·8 mg. per 100 ml., supporting evidence being provided by the urinary calcium excretion before the infusion of calcium and by the response to the infusion.

3. *November, 1956: before parathyroidectomy.*—The results in this subsection are similar to those in subsection 1.

The serum-calcium had returned to abnormally high levels, and one of the three plasma-phosphate levels was subnormal. The urinary calcium excretion ranged from 225–298 mg. per 24 hours. (mean 265 mg.) and the serum-alkaline-phosphatase was 8 K-A units per 100 ml.

The total serum-protein was 6·4 g. per 100 ml. (albumin 3·8 g. per 100 ml. and a normal electrophoretic pattern). The E.S.R. (Westergren) was 7 mm. in the first hour.

4. *After parathyroidectomy.*—The serum-calcium returned to normal and has remained normal. After operation, the daily urinary calcium excretion fell markedly, but it has not been redetermined since discharge from hospital. The plasma-phosphate was subnormal on March 1, 1957, but was normal on Oct. 11. On March 1 the serum-alkaline-phosphatase was 6·6 K-A units per 100 ml.

Discussion

Although this patient now only has part of one kidney remaining, her prognosis as far as the recurrence of renal calculi is concerned has been greatly improved. The most important effect of parathyroidectomy was to reduce the urinary calcium excretion from 266 mg. to 120 mg. in 24 hours.

The last column in the table shows the urinary calcium concentration, an important determination in patients who have a tendency to form renal calculi. The maximum concentration of which a patient is capable can be determined during a calcium-infusion test; it probably shows considerable individual variation (some of Richardson's (1953) patients excreted urine containing 28 mg. of calcium per 100 ml. without being subjected to a calcium infusion), but, for this patient, the maximum urinary calcium concentration was about 20 mg. per 100 ml. By increasing her fluid intake (November, 1956) this patient considerably reduced her urinary calcium concentration, and further reduction followed parathyroidectomy.

Before parathyroidectomy the biochemical results fell into three clear subdivisions, corresponding to the first three (horizontal) subdivisions in the table. In September and November, 1956, hyperparathyroidism was indicated by hypercalcæmia and, on two occasions, by hypophosphatæmia. Urinary studies did not support the diagnosis, though in retrospect the average urinary calcium excretion of 266 mg. per 24 hours should probably have been regarded as abnormal (cf. Dent and Hodson 1954), as should the urinary excretion of 159 mg. of calcium per 24 hours, after stabilisation on a dietary intake of 120 mg. of calcium per 24 hours (Pyrah 1956, McGeown and Bull 1957). By contrast, the results on Oct. 28–29, 1956, were strikingly normal, with normocalcæmia and a urinary calcium excretion of 275 mg. in 24 hours (which was at that time considered to be normal), followed by a normal response to the calcium infusion test.

This pattern of results is most readily explained by the hypothesis that the parathyroid adenoma was only intermittently overactive, being inactive at the end of October, 1956. Such a possibility was suggested by Richardson (1953), though none of his cases demonstrated intermittent overactivity clearly. Intermittent hypercalcæmia is mentioned as a pitfall in the diagnosis of hyperparathyroidism by Fraser and King (1957), when discussing why a patient should simultaneously have normocalcæmia, hypophosphatæmia, and hypercalciuria; this triad was shown by this patient in the control period before the calcium infusion (regarding 275 mg. of calcium per 24 hours as an abnormally high urinary excretion). The two other possible explanations discussed by Fraser and King for this biochemical triad were induced acidosis (Shohl 1939, Farquharson et al. 1931), and idiopathic hypercalciuria (Albright et al. 1953); on Oct. 29, 1956, the patient's acid-base balance was normal, and she clearly did not have idiopathic hypercalciuria. When hypercalciuria and hypophosphatæmia are observed in a patient with normocalcæmia who is not acidotic, Fraser and King (1957) advocate the taking of serial blood samples so as to avoid missing a latent hypercalcæmia.

It is impossible to say whether the period of inactivity of this patient's adenoma was spontaneous, or precipitated by the complications that followed pyelolithotomy and partial nephrectomy. This case-report, however, shows that the serum-calcium level can fluctuate widely in a patient with hyperparathyroidism, and it shows that, in the absence of other unequivocal evidence of hyperparathyroidism, such fluctuations can endanger the diagnosis.

The plasma-phosphate level was subnormal on Oct. 29, 1956, and this was the only biochemical test then that indicated a diagnosis of hyperparathyroidism, considering the overall results for that period by themselves. It emphasises the value of determining the plasma-phosphate level in routine screening of patients for suspected hyperparathyroidism. Hypercalcæmia may be only intermittent, and the observation of a low plasma-phosphate level during a normoclacæmic interval may then be particularly important.

Summary

A case is reported of hyperparathyroidism due to an adenoma that was only intermittently overactive. Difficulties arise in the diagnosis of intermittent hyperparathyroidism, and plasma-phosphate determinations are valuable in such patients.

I am very grateful to Mr. C. J. B. Murray for permission to publish this case, and I am much indebted to Dr. J. D. N. Nabarro and Mr. R. T. Turner-Warwick for many helpful discussions. The histological reports and microphotograph of the parathyroid adenoma were kindly supplied by Dr. A. D. Thomson, and I should like to thank the staff of the Courtauld Institute for the biochemical estimations.

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TRIPELENNAMINE (PYRIBENZAMINE) IDIOSYNCRASY

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BECAUSE tripelennamine ('Pyribenzamine') is one of the constituents of a popular anti-histamine preparation commonly prescribed in this country, it is considered that the case reported here may assist in the elucidation of similar diagnostic puzzles. Although such cases must be rare, the symptoms are severe, and failure to recognise the condition could lead to tragedy.

Case-report

A married woman, aged 49, was admitted to hospital on April 25, 1957, in coma. Five days earlier she had complained of suddenly feeling cold, nausea, and then diarrhœa. Since then she had become progressively worse, complaining of pains in her joints and back, severe headache, and loss of appetite. A dry unproductive cough and a low pyrexia (100°F) appeared,

abdominal pains became severe, and the patient began to ramble mentally.

On admission signs of dehydration were evident, and her reflexes were sluggish, but her pupils reacted to light. She could not be roused.

Treatment and progress.—An intravenous saline drip was given, and over the next twelve hours her general condition improved and sphincter control was regained. Twenty-four hours after admission she was conscious but confused and disoriented in place and time. She took fluids willingly and her diarrhœa abated. She had photophobia and severe tenderness over the lower edge of her liver and gall-bladder. Clinical, radiological, and laboratory investigations were undertaken to exclude conditions such as acute cholecystitis, infective hepatitis, renal disease, and infection by salmonella. All the findings were normal except a relative neutropenia of 6000 white blood-cells per c.mm. On the third day urticaria appeared on the scalp, arms, and feet and was controlled with 'Antistin' 50 mg. four-hourly and promethazine 25 mg. at night. In spite of help and advice from colleagues no satisfactory diagnosis was made before the patient was discharged after eleven days in hospital.

Later developments.—Ten days after discharge from hospital the patient was again seen, because the urticaria had recurred severely. Chlorpheniramine ('Piriton') was prescribed. Late that evening the patient's husband telephoned to say that the nausea, vomiting, and disorientation had returned. The patient, unable to obtain piriton immediately, had taken a tablet of tripelennamine-antistin mixture. The symptoms began some two hours after ingestion of the tablet. It was then learnt that she had been given these tablets, ten days before the onset of the original symptoms, by a surgeon who was treating her chronic rhinitis. Subsequently piriton gave the required relief for both the urticaria and the rhinitis without ill effect.

Discussion

A previous history of infantile eczema, hay-fever, urticaria, allergic rhinitis, and severe reactions to parenteral and topical administration of penicillin was given. The patient had no clear memory of events from the time she was compelled to take to her bed until about twenty-four hours after admission to hospital.

In view of the dramatic revelation of the correct diagnosis it was not considered wise to confirm it by further trials of the suspected anti-histamine. Antistin had already been given unsuspectingly in hospital, without ill effect; hence tripelennamine remained the likely offender. Published reports strengthen this suspicion.

Most of the reports of toxic effects from tripelennamine were published in America several years ago, but *The Lancet* (1950) called attention to the dangers of overdosage with anti-histamines. Wyngaarden and Seevers (1951) and Sparling (1951) were mainly concerned with the toxic effects of overdosage with tripelennamine and diphenhydramine ('Benadryl') in children. That severe toxic reaction does not depend entirely on dosage was noted by Judge and Dumars (1953) and Bunce and Huntley (1953); the former reported delirium, coma, confusion, headaches, and pyrexia among the toxic effects. Lott et al. (1948) mentioned disorientation, dryness of the mouth, and diarrhœa; and Loveless (1947) shock, urticaria, and neutropenia. Judge et al. also stated that toxic reactions were commoner in persons with a previous history of allergy. They noted that the reactions appeared from two to eight hours after absorption of the drug.

Summary

A case of idiosyncrasy to tripelennamine, distinct from toxic effects due to overdosage, is presented. There were severe neurological and gastrointestinal symptoms, with allergic skin reactions.

I am indebted to Air Marshal Sir P. B. Lee Potter, director general of medical services, and Dr. R. D. Darley, of Esher, Surrey, for permission to publish this case, and to Squadron-Leader J. S. N. Mitchell, of the Royal Air Force Hospital, Uxbridge, for the clinical details.

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HÆMORRHAGIC DIATHESIS DUE TO INCREASED CAPILLARY FRAGILITY SECONDARY TO OVARIAN DEFICIENCY

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THE vascular changes associated with menstruation are probably not entirely confined to the endometrium. The fragility of the skin capillaries has been shown to be increased just before each menstrual period and during its first few days (Bickel 1931, Schultzer 1934, Salvatore 1952, Buchholz 1953), and women certainly bruise more easily at these times (Goldburgh and Gouley 1940). A contributory factor may sometimes be premenstrual thrombocytopenia, and cases have been described of thrombocytopenic purpura associated with menstruation (Nagy 1925, Minot 1936).

Some workers have described, under the title "David's disease", non-thrombocytopenic purpura thought to be due to ovarian deficiency (Wintrobe 1951, Whitby and Britton 1953), but David's five cases ultimately became thrombocytopenic (David 1926); they were all women, but there is little to suggest that they had ovarian deficiency. The following case is reported because it seems to be the first in which the relationship between the hæmorrhagic tendency and ovarian deficiency has been clearly shown.

Case-report

A European woman, aged 38, was admitted in February, 1957. She had given birth to a live infant in 1947 by a normal delivery, and later had had three miscarriages. In 1954 she began to have pain in her right iliac fossa for 2 or 3 days in each intermenstrual period. In early 1956 she noticed a lump in the same region; later that year a benign cystic right ovary was removed; the left ovary and uterus appeared normal. After this operation the intermenstrual pain ceased, but her next menstrual period resulted in profuse hæmorrhage for 7 days and a brown vaginal discharge for a further 10 days.

She sailed from England in December, 1956, and during her second menstrual period after the operation a child on the ship fell on her, hitting her abdomen with its head. She immediately had severe abdominal pain and vomiting. When she arrived at Las Palmas she had a second laparotomy, and was found to have a small amount of blood in the abdominal cavity and a large band of adhesions matting down the small intestine to the uterus. This band of adhesions had two bleeding-points which were ligated, and the intestine was freed from the uterus. The left ovary was found to be atrophic.

The second menstrual period continued for 3 weeks, and she had to be given a blood-transfusion. During this period bruises began to develop on her limbs and abdomen. She sailed from

Las Palmas at the beginning of January, 1957, but on the ship soon began to have nausea and severe abdominal pains in the suprapubic and left paraumbilical regions. The colic became very severe and bruises continued to develop.

She was admitted to hospital with severe abdominal colic immediately on arrival in Singapore. The only abnormal physical signs were the operation scars, large bruises on her legs and abdomen, and an internal congenital strabismus of her left eye with suppression of the left visual image. The abdomen was soft and not tender.

Investigation showed a weakly positive capillary-resistance test (Hess test with the cuff at 80 mm. Hg for 10 minutes), hæmoglobin 12·1 g. per 100 ml., white blood-cells 8300 per c.mm. (78% neutrophils, 19% lymphocytes, 2% monocytes, 1% eosinophils), thrombocytes 290,000 per c.mm. The thrombocytes appeared normal in stained dry films and in wet preparations. The bleeding-time, clotting-time, one-stage prothrombin-time, prothrombin-consumption time, clot retraction, plasma-fibrinogen, serum-proteins by electrophoresis, urinary diastase, and serum-amylase were all within normal limits. The urine contained no sugar or ketone bodies, and only a trace of albumin. The urinary deposit was microscopically normal, and the stool contained no occult blood.

Treatment and course.—It was thought that she had a hæmorrhagic diathesis producing bruising and abdominal colic (as in Henoch's purpura), and she was given 200 mg. of cortisone by mouth in divided doses on the 1st day, 150 mg. on the 2nd day, and then 100 mg. daily for a further 23 days. Injections of 40 units of long-acting corticotrophin were given twice weekly to minimise adrenal suppression.

There was no clinical response; the abdominal colic increased and frequent injections of pethidine became necessary to control the pain. Occult blood began to be present irregularly in the stools, and the capillary-resistance test became strongly positive. Repeated investigation showed no significant change in the hæmatological findings. A screening blood-coagulation test, in which the patient's plasma was mixed with varying proportions of normal plasma and was then recalcified at 37°C, showed that the platient's plasma clotted slightly more quickly than normal plasma. There was therefore no evidence of any blood-coagulation defect, and it seemed probable that the hæmorrhagic diathesis was due to increased capillary fragility alone.

The administration of calcium chloride 2 g. intravenously and ascorbic acid 500 mg. by mouth, and the transfusion of 450 ml. of fresh blood, produced no clinical improvement and no change in the strongly positive capillary-resistance test.

Since the hæmorrhagic tendency had become serious only after the removal of one ovary, and since the other ovary had been found to be atrophic, the patient was given a course of oral stilbœstrol in high dosage (40 mg. daily). Her condition gradually began to improve, and by the 3rd day of stilbœstrol therapy it was possible to stop the injections of pethidine. By the 6th day bruising had ceased and the capillary-resistance test was only weakly positive. Stilbœstrol was stopped after 17 days, and within 36 hours the patient again had bruises and severe abdominal colic. Pethidine had to be given again, and the capillary-resistance test became strongly positive. 7 days after the cessation of stilbœstrol therapy dienœstrol 6 mg. daily was started. Once again the bruising and abdominal pain gradually ceased, and the capillary-resistance test became negative on the 3rd day of dienœstrol therapy.

In hospital the patient was observed to have frequent transient losses of consciousness. These attacks ceased when she was given troxidone 900 mg. daily, but after 3 days an erythematous rash developed, apparently in relation to the drug, and administration was stopped. She was then maintained on phenobarbitone 180 mg. daily, and the attacks, which seemed to be petit mal possibly resulting from small hæmorrhages into the cerebral cortex, became much less frequent.

She was discharged at the end of March, 1957, and joined her family in North Borneo. She has continued on dienœstrol and phenobarbitone as above, and up to November, 1957, had only occasional bruises and minor attacks of colic. She still had occasional attacks of petit mal.

Discussion

Under the title " hereditary familial purpura simplex ", Davis (1939, 1941) reported eighty-eight cases, eighty-four of them in women, in which there was evidence of a non-thrombocytopenic hæmorrhagic tendency. The bleeding-times, coagulation-times, and clot retraction were normal. Many had positive capillary-resistance tests, and in most cases hæmorrhagic symptoms began around the menopause. Davis found that the condition was common in women, and the present case may be another example of the same syndrome. This case is interesting because there is good evidence that the hæmorrhagic tendency became more evident after oophorectomy and responded to œstrogen therapy. It seems possible that patients with hereditary familial purpura simplex may also respond to this treatment.

In the absence of manifest allergic findings or a suggestive family history, it would be difficult to differentiate Schönlein-Henoch purpura of allergic origin from hereditary familial purpura simplex. Both Schönlein (1839) and Davis (1939, 1941) drew attention to the high incidence of rheumatic symptoms in their respective syndromes, and in both the only hæmatological and vascular abnormality seems to be increased capillary fragility. It seems probable that the two conditions differ only in their ætiology.

The congenital strabismus of the patient reported may be a purely coincidental finding, but the report of seven cases in a single family with increased capillary fragility, six of whom had ptosis (Fisher et al. 1954), raises the possibility of a similar hereditary connection in this case. One of their cases (in a woman, aged 32, with bilateral ptosis and a history of ecchymoses, four miscarriages, and hypermenorrhœa) closely resembles the case reported here.

Summary

A case is described of a woman in whom a hæmorrhagic diathesis developed, owing to increased capillary fragility following oophorectomy; this responded well to œstrogen therapy.

This syndrome resembles hereditary familial purpura simplex, which in turn resembles allergic Schönlein-Henoch purpura.

Hereditary familial purpura simplex may also be found to respond to œstrogen therapy.

This patient was admitted under the care of Prof. G. A. Ransome; I am grateful to him for permission to publish the case, and to Dr. H. Breitkreuz for interpreting the relevant German literature.

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Preliminary Communication

HYPERSENSITIVITY TO HISTONE INDUCED EXPERIMENTALLY IN RABBITS *

AN abnormal gamma-globulin has been found in the sera of patients with acute disseminated lupus erythematosus (L.E.), scleroderma, dermatomyositis, and certain forms of rheumatoid arthritis in which L.E. cells are present.[1] This abnormal protein has been investigated histochemically by the fluorescent antibody technique [2] supplemented by enzymatic digestions and inhibition procedures, and has been shown to possess an apparently specific reactive affinity for intranuclear desoxyribonucleoproteins in autologous, homologous, and heterologous tissues. A similar histochemical phenomenon in lupus patients has been described by Friou.[3 4]

The constancy of the abnormal gamma-globulin in patients with the listed disorders and the resemblance between the intranuclear binding of nucleoprotein by gamma-globulin and the findings in immune reactions suggest that hypersensitivity to desoxyribose-nucleic-acid-proteins may play a significant role in the pathogenesis of some of the so-called diseases of collagen.

To test this we have attempted to sensitise rabbits against heterologous nucleoprotein, in order to establish the immunological state supposed to exist in human patients, and perhaps even to create in animals an experimental disease state similar to, if not altogether identical with, that found in human systemic lupus erythematosis, scleroderma, and dermatomyositis.

Methods

Albino rabbits were apportioned at random to groups (table I), each lot containing both males and females. The antigen was commercial calf-thymus histone prepared by the method of Mirsky and Pollister,[5] dissolved in 0·2 M hydrochloric acid, and adjusted to neutrality with 1·0 M sodium hydroxide. Rabbits in group I received, in addition to the nucleoprotein antigen, an adjuvant based on that of Fischel et al.[6] (table II). Each dose contained the same constituents, but they were mixed in different proportions, and with the Fischel adjuvant a different antigen was used.

Initial immunisation of the rabbits in group I was attempted by the intramuscular injection of two doses of the antigen-adjuvant combination described. Each rabbit in group II was given intravenous histone 50 mg. in aqueous solution, and those in group III were injected intramuscularly as their fellows in group I but received adjuvant alone. A month later the rabbits were given subcutaneous booster doses of histone 50 mg.

All the animals were bled periodically from the marginal ear vein, and their sera were assessed for antibody content by the indirect or " layering " fluorescent antibody technique. Tissue substrates included autologous rabbit skin obtained by biopsy under local anæsthesia (procaine hydrochloride 1%); homologous rabbit liver and heterologous bovine aorta secured immediately after death; and heterologous human skin and placenta, obtained respectively at surgery and at delivery. Fresh frozen sections were stained with rabbit serum and then counterstained with anti-rabbit gamma-globulin goat-serum conjugate. Cross-inhibitions, as described elsewhere (Bardawil et al.[7]), were performed between rabbit and human sera. Stained sections were examined under a Reichert ' Zetopan ' fluorescence microscope and photographed in colour upon ' Super Anscochrome ' daylight emulsion with a ' Leica IIIF ' 35-mm. camera with ' Micro Ibso ' attachment.

Results

Staining Reactions

Of the three animals in group I two died of concomitant infection the first week following injection. The surviving rabbit, Adj H-1 (table I), first showed the presence of antibodies to histone 49 days after the initial injection of antigen and about

7. Bardawil, W. A., Toy, B. L., Hertig, A. T. *Amer. J. Obstet. Gynec.* April, 1958, p. 708.

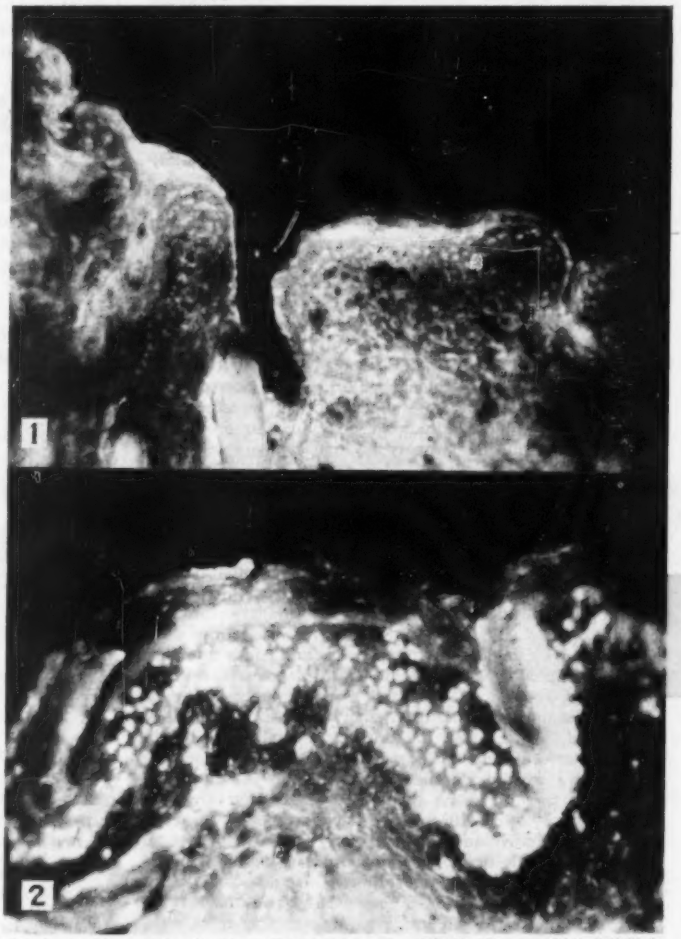

Fig. 1—Autologous localisation of serum-gamma-globulin from rabbit Adj H-1. Note nuclear staining within superficial layers of epithelium.

Fig. 2—Heterologous localisation of serum-gamma-globulin from rabbit Adj H-1. Human skin as tissue substrate. Note brilliant fluorescence of stained cellular nuclei.

* Supported by Grant C-2451 from the U.S. Public Health Service, Bethesda, Maryland, U.S.A.

1. Bardawil, W. A., Toy, B. L., Galins, N., Bayles, T. B. *Amer. J. Path.* 1958, in the press.
2. Coons, A. H. *Int. Rev. Cytol.* 1956, **5**, 1.
3. Friou, G. J., Finch, S. C., Detre, K. D. *Fed. Proc.* 1957, **16**, 413.
4. Friou, G. J. Society of Clinical Investigation meetings, Atlantic City, N.J., 1957.
5. Mirsky, A. E., Pollister, A. W. *J. gen. Physiol.* 1946, **30**, 117.
6. Fischel, E. E., Kabat, E. A., Stoerk, H. C., Bezer, A. E. *J. Immunol.* 1952, **69**, 611.

TABLE I—EXPERIMENTAL GROUPS

Group	Antigen	Rabbit	Result
I	Histone and adjuvant	Adj H-1	Nuclear staining
		Adj H-2	Died
		Adj H-3	Died
II	Histone	H-1	—
		H-2	—
		H-3	Died
III	Adjuvant	C-1	—
		C-2	—

15 days after the secondary dose. The antibody level was estimated crudely by the intensity of nuclear staining, and was observed to increase gradually over about 55 days, thereafter declining until staining became weak, irregular, or (as it often did) disappeared. A second booster injection, given to this rabbit about 10 weeks after the first, restored the capacity for intense intranuclear staining.

Serum-antibodies in the hypersensitive rabbit are bound histochemically with intranuclear material in autologous, homologous, and heterologous tissues (figs. 1 and 2). In addition to staining bovine nuclei, from which the antigen had been derived, the serum-gamma-globulin of rabbit Adj H-1 reacted also with rabbit and human nucleoprotein.

In group II rabbit H-3 died during the first week after injection. Rabbits H-1 and H-2 and the two controls in group III never produced antibodies measurable by the present technique. The participation of the rabbits' own gamma-globulin was excluded by direct staining for this protein by techniques described elsewhere.[7]

Because a direct conjugate of serum-globulin from rabbit Adj H-1 was not available, auto-inhibition was not attempted.

TABLE II—SENSITISING SOLUTION

Dry antigen	50 mg.	Aquaphor*	0·2 ml.
Tubercle bacilli	0·5 mg.	Mineral oil	0·4 ml.

Modified from Fischel et al.[6]

* Emulsifying agent made by Duke Laboratories Inc.

Serum from this rabbit has successfully cross-inhibited staining by a conjugate made from the gamma-globulin of a patient with active scleroderma.

Collateral Tests

At the apparent peak of nuclear staining intensity in Adj H-1, 35 days after the booster injection, a positive Arthus reaction (local œdema and necrosis) was obtained by the intradermal injection of histone 1·5 mg. An attempt to induce an Arthus reaction after the capacity for intranuclear staining had waned was fruitless, but an additional intradermal injection applied about a month after the second booster dose caused severe local haemorrhage and necrosis. Attempts to elicit similar responses from the rabbits in groups II and III failed.

In attempted ring precipitations, rabbit and human sera were tested against neutral solutions of histone in multiple dilutions. The results were inconclusive because both test and control sera precipitated the antigen at practically all concentration levels, perhaps because of the presence of calcium and magnesium cations in the sera.

L.E.-cell preparations made with serum from rabbit Adj H-1 did not show typical inclusion bodies. Blood-counts on the sensitised rabbit showed marked anæmia and leucopenia (lymphocytes 70%, segmented forms 29%, basophils 1%).

Discussion

In the surviving test rabbit (Adj H-1) hypersensitivity to histone, induced experimentally, led to the appearance of a circulating serum-antibody with a demonstrable reactive affinity for autologous, homologous, and heterologous intranuclear nucleoproteins. The histochemical behaviour of this antibody seems to be morphologically identical with that of the so-called abnormal globulin or "L.E. factor" reported in human collagen disease. The heterophil reactivity observed is to be expected in view of the demonstration by Allfrey et al.[8] that desoxyribose nucleic acid from various sources—including calf thymus and kidney, chick erythrocytes, paracentrotus and trout sperm, and wheat germ—can restore to nuclei their capacity for synthesis after it has been destroyed by desoxyribonuclease. Though nucleoproteins can mediate the most complex biological functions, they seem to remain sufficiently primitive to be immunologically non-species-specific.

If one of the so-called collagen diseases is shown to have a definite basis in hypersensitivity against nucleoprotein, the experimentally noted lack of species specificity may be taken to imply that such allergy in the human patient may follow antigenic stimulation by viral, bacterial, or animal desoxyribonucleoprotein. It has been found in this laboratory that positive sera stain ordinary smears of streptococci, including the viridans group. Indeed, if a non-specific sensitisation against nucleoprotein is assumed, it is possible to construct a simple and orderly pathogenic theory to account for the classical morphological lesions found in the collagen diseases, embracing not only their character but also their topographical distribution in the body.

Demonstration of the intranuclear binding of nucleoprotein is but the first step in the establishment of nucleoprotein sensitivity as a factor in the pathogenesis of some of the collagen diseases. The cross-inhibition of serum from a patient with scleroderma provides additional suggestive evidence of a common process. The most arduous task of all, that of inducing clearcut clinical disease in animals artificially, has not yet been accomplished.

Summary

The histochemical behaviour of sera from human patients with certain so-called collagen diseases has been simulated by samples from an animal sensitised against bovine histone.

Evidence is presented that the observed effect depends on immunological reaction, and the relation to human disease is discussed.

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8. Allfrey, V., Mirsky, A. E., Osawa, S. The Nucleus and Protein Synthesis, in The Chemical Basis of Heredity (edited by W. D. McElroy and B. Glass); pp. 200 231, especially table 4, p. 221 (listing of species) and p. 218 ff. Baltimore, 1957.

"The fact that most students attend lectures has repercussions on their lecturers. Having a good attendance, teachers may assume that their students must learn a good deal from them, or else they would not attend. Accordingly, any lecturer who does not come into close contact with students in laboratory classes, or in other ways, can very well live in a pleasant dream-world about the effectiveness of his teaching. Perhaps the easiest and cheapest way to improve university teaching about one hundred per cent would be to make it compulsory for every lecturer to spend a good deal of time with his students immediately after each lecture to find out what they did, and did not, learn from it."—ARTHUR W. HAM, *Canad. med. Ass. J.* 1958, **78**, 482.

Reviews of Books

Principles of Gynæcology

T. N. A. JEFFCOATE, M.D., F.R.C.S.E., F.R.C.O.G., professor of obstetrics and gynæcology, University of Liverpool. London: Butterworth. 1957. Pp. 696. 75*s*.

Professor Jeffcoate's new book will be welcomed by the reader who wants more than a standard textbook of factual knowledge. In his preface he says that the book is aimed at the undergraduate at the top of the class; but because the emphasis throughout is on the assessment and treatment of the patient as an individual rather than as a case, it could equally well be said that the book is intended for the student who wishes to become a good doctor. Description of operative technique is omitted, but symptoms and diagnosis are very fully discussed. There are excellent chapters on problems of sex and marriage, hormone therapy, genital cancer, and many other subjects of daily importance to the family doctor. The book is essentially practical. Short illustrative case-histories and hints from the author's wide experience increase its value.

The headings and layout are clear, the illustrations, including twelve colour plates, excellent, and the index comprehensive. As a matter of policy no references are given; it is perhaps a pity that a book that so stimulates the interest does not give any guide to further reading and does not provide students "at the top of the class" with brief biographical footnotes about the famous names in gynæcology. A few subjects, such as intersexuality, developmental anomalies, and bladder function are described in detail perhaps unnecessarily great for the non-specialist reader. They are subjects, however, which have important practical applications and on which much light has been shed by Professor Jeffcoate's own researches and writings.

The book can be confidently recommended not only as a textbook on medical gynæcology but also as an excellent thesis on the proper balance between the scientific and the humanistic approach to a subject in which psychosomatic factors are important.

Respiratory Disease and the General Practitioner

C. M. C. TOUSSAINT, M.R.C.S., D.P.H., consultant chest physician, Willesden Chest Clinic and Central Middlesex Hospital, London; president, British Tuberculous Association, 1957–58. London: National Association for the Prevention of Tuberculosis and Diseases of the Chest and Heart. 1958. Pp. 28. 7*s*. 6*d*.

THIS useful handbook deals with the three major respiratory diseases—pulmonary tuberculosis, lung cancer, and chronic bronchitis. The sections on pulmonary tuberculosis and lung cancer are excellent: essential features have been selected with an unerring eye, and are set out with admirable clarity and conciseness. Important points are emphasised by illustrative case-reports and radiographs. The only shortcoming is the rather dogmatic approach to the management of pulmonary tuberculosis: it seems injudicious, for example, to advocate one year's chemotherapy in preference to a longer period when the general practitioner's adviser on the spot may, possibly rightly, have other views. The three pages on chronic bronchitis fall below the generally high standard, but this is nevertheless a splendid little book. As a guide to the early diagnosis of pulmonary tuberculosis and lung cancer it could scarcely be bettered, and we warmly recommend it to the general practitioner.

Body Water in Man

MAURICE B. STRAUSS, M.D., professor of clinical medicine, Boston University School of Medicine. London: J. & A. Churchill. 1958. Pp. 286. 50*s*.

THE title of this book seems to invite comparison with the monograph on Body Water by the late J. P. Peters, to whom it is dedicated. In many ways the book is worthy of this comparison, for it is readable, scholarly, and critical, and manages to illumine a thorough survey of the literature with interesting allusions to comparative physiology. There are more non-American references than is usual: some of those, as to Homer, Sallust, and the Bible, are no doubt obligatory and pre-Columbian, but others are facultative.

The treatment of the subject is centred on physiology, but clinical information is introduced where it illustrates physiological principles. This allows a more leisurely treatment of the intake and output of water and salt than is commonly found in similar works. The core of the book is an outstanding account of antidiuretic hormone, and the factors which stimulate or prevent its production; adrenal hormones are more cursorily dealt with, and this is perhaps surprising in a book which emphasises volume rather than osmolarity. The studies of Wirz on the renal action of antidiuretic hormone are not mentioned, and there is only casual reference to potassium, on which the volume of intracellular fluid largely depends.

Although the book does not perhaps fulfil all the title promises, it can be recommended as a critical review of the mechanisms regulating the amount of water and salt in the body.

Drugs, Their Nature, Action and Use

HARRY BECKMAN, M.D., director, department of pharmacology, Marquette University Schools of Medicine and Dentistry. Philadelphia and London: W. B. Saunders. 1958. Pp. 727. 105*s*.

Professor Beckman's new textbook of pharmacology is designed chiefly for undergraduate students. The brief opening section, the pharmacologist's apologia, is followed by eight general chapters on drugs and their actions. The third section, the major part of the book, deals with individual drugs in much detail, and each chapter or subchapter is rounded off by a useful list of references. Those who are familiar with Professor Beckman's writing will look forward to a lively and entertaining book as well as a sound text of pharmacology—and they will not be disappointed. Some readers will disagree over details and points of emphasis, but in the main there is very little with which they can quarrel.

It is hard to say who will find the book most useful. Most medical students in this country would probably consider it both too expensive and too detailed for use as a standard text, but they will find it very helpful when they need a fuller yet concise account of a particular drug, and for this reason it should be in every medical school library. Although it is less comprehensive than some other large American textbooks of pharmacology, it could be used with advantage by physicians as well as pharmacologists; they will both appreciate it for its sound common-sense pharmacology and its pleasant and easy style.

A Woman Doctor Looks at Love and Life (London: Macmillan. 1957. Pp. 190. 8*s*. 6*d*.).—Dr. Marion Hilliard is the lately retired chief of obstetrics and gynæcology at Women's College Hospital, Toronto, and her book is one of advice to women from adolescence to old age, with a word to husbands, based on her experience of hospital and private practice and of her own (single) life. She writes in colloquial Canadian which strikes oddly on the English ear, and the implied social and medical background of urban Canada is strangely different from our own; but there is much wisdom, tinged with humour, in her chapters (that on the menopause is a happy example), and she has an acceptable philosophy—though most things in life are inevitable they can be turned to good account.

Connective Tissue (Oxford: Blackwell Scientific Publications. 1957. Pp. 363. 42*s*.).—In 1956 the Council for International Organisations of Medical Sciences held a conference in London to expound and coordinate modern views on connective tissue. Speakers came from East and West Europe, the United States, and South Africa. Nomenclature and chemical methods were much discussed. The proceedings have been edited (under the direction of Prof. R. E. Tunbridge, the chairman) by Dr. Madeline Keech, Dr. J. F. Delafresnaye, and Dr. G. C. Wood.

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THE LANCET
LONDON 26 APRIL 1958

The Snows of Yesteryear

To most of us the passions and protestations, the charges and countercharges, the hostilities and heroism of the winter of 1956–57 are mere scraps of memory: they have become the raw material of the historian and social scientist. It is seventeen months since the first plane-load of Hungarian refugees were welcomed in this country on a wave of popular sympathy. Within a few months their number was to increase to 20,000; and they were soon followed by more than 7000 evacuees from Egypt. This first phase of the refugee saga was one of crisis and achievement. The crisis arose from the need to provide, almost at a moment's notice, thousands of destitute people with shelter, food, and all the basic necessities of life. The achievement was the work of voluntary organisations which successfully completed this task. These philanthropic bodies, always the butt of the cynical and the sophisticated, have had to face many difficulties in recent years; with the inauguration of the Welfare State even some of their friends questioned their continued value. No such doubts remained in the minds of those who observed their work in the last days of November and the early days of December, 1956. That " the rapid success of the Hungarian refugee operation, and the slower but no less praiseworthy achievements in the more difficult task of resettling the Anglo-Egyptians, may be ascribed, above all, to [their] effort " is one of the conclusions in *Refugees in Britain*, a P.E.P. pamphlet.[1]

These organisations depended on the generosity of countless individuals, and they benefited from the Government's moral support; but individual charity had to be harnessed, and there was an inevitable time-lag before official organisations began to function. During the vital first weeks, while the British Council for Aid to Refugees (the Government organisation set up to cope with the emergency) tumbled from crisis to crisis, the British Red Cross Society and other voluntary organisations were able to call on the immediate services of a highly trained, well-disciplined, and devoted body of workers; and, unhampered by the need to formulate long-term policy, they grappled with the difficulties at hand. These included the provision of medical cover at reception stations and in transit camps, the accommodation of the sick in hospital (where interpreters were required even for rudimentary history-taking), and the maintenance of communication between hospital patients and their families. While local practitioners and medical officers on loan from the Armed Forces gave first-aid and casualty service, the sudden influx of several thousand apparently fit immigrants raised a formidable public-health problem. It is difficult not to sympathise with critics who later deplored that medical cover did not include, from the start, preventive measures, especially radiographic screening for tuberculosis [2]; but this was not an act of official ineptitude, nor was it due to lack of foresight by individual medical officers of health. It is possible to argue that present-day immigration policy, which takes no account of disease dissemination, is inspired by the ostrich rather than by the spirit of SNOW; but there is no doubt that the official attitude towards the Hungarian and Anglo-Egyptian refugees was in full accord with this policy.

The weeks of emergency and improvisation were followed, inevitably perhaps, by a period of disenchantment on the part of the refugees and of frustration on the part of their hosts. A striking observation in *Refugees in Britain* is the similarity between the mental reactions of two such widely different groups of people as the Hungarians and the Anglo-Egyptians:

> " It might have been expected that the Hungarians would be particularly amenable, being filled with gratitude for the help and generosity of the British people, while the Anglo-Egyptians would be embittered at being expelled from Egypt and insistent on the duty and responsibility of the British Government towards them. There were Hungarians who were extremely grateful, and Anglo-Egyptians who were disgruntled, but the distinction is by no means so clear cut."

It took doctors and administrators several months to realise that refugee existence itself imposes on its victims a distinct pattern of behaviour; and the psychological basis of this behaviour is still far from clear. Certainly many factors are involved: they range from temporary casting-away of certain social inhibitions (an action familiar to every holiday tripper) to complex feelings of guilt towards those left behind. *Refugees in Britain* mentions but a few of its manifestations, such as the insistence of many highly educated refugees that behind the ill-advised but well-meant assurance given to them in Austria—that Britain would only be a transit station to America—lay a diabolical ruse to acquire cheap labour. This state of mind was often reflected in psychosomatic illness, and it is fortunate that both mental and physical disturbances only rarely left permanent scars.

The third phase in the life of the refugees was a gradual return to normality; and this significantly coincided with the recognition by the authorities that the key to resettlement was permanent employment. In this respect, says the P.E.P. pamphlet, " the Hungarians were one of the most promising bodies of refugees to arrive in this country ". An early check (later confirmed by random samplings) showed that 70% were aged between eighteen and thirty-five; they had not been demoralised by long periods in refugee camps. Of nearly 15,000 who had remained in the United Kingdom, only 617 were still registered as unemployed at the end of December, 1957; and only about 1500 (who included dependants, unaccompanied children, and students) had not yet been settled in permanent employment. Despite the absence of a language barrier, the permanent resettlement of the Anglo-Egyptians proved a far more difficult task. " They were mainly in family groups, many middle-aged or elderly, and usually with a background of commercial and administrative work." Some

1. Refugees in Britain: Hungarians and Anglo-Egyptians. *Planning*, 1958, **24**, no. 419. Published by P.E.P., 16, Queen Anne's Gate, London, S.W.1. Pp. 35. 2*s*. 6*d*.

2. See *Lancet*, March 29, 1958, p. 686.

have refused work because the standard was below what they had been accustomed to: some are still delaying in the hope that they may eventually be allowed to return by the Egyptian Government. Of the Anglo-Egyptians who had been originally accommodated in hostels 50% were still there at the end of 1957, compared with only 10% of the Hungarians.

There remains a "hard core" of unsettled refugees from both groups, and, in the case of the Hungarians, this includes a small proportion of adolescent delinquents. But in more than this narrow sense the refugee problem, like yesteryear's snow which haunted the poet, is still with us. Throughout the world refugees are thought to number little short of 2 million—an estimated 250,000 in Europe, 915,000 Palestine Arabs, 700,000 mainland Chinese in Hong Kong, and 10,000–15,000 Europeans (mostly White Russians) in China and Hong Kong.[3] Of these Mr. CHRISTOPHER CHATAWAY and his colleagues [4] write:

> "We talk of tolerance, justice, and the dignity of mankind, and all over the world we find stagnant pools of humanity, who have been robbed of all these things; who stand behind wire, dragging their uncovered roots, friendless, soilless, waiting for ground in which they may grow again into citizens. Their presence mocks loud at our pretentions of civilisation. How enlightened can we be when so many plain people are cast out by fear?"

CHATAWAY and his colleagues believe that a World Refugee Year, in which Britain should play a leading part, would go far towards solving this vast problem.

Chimeras and Antibodies

INSIGHT into the mechanism of antibody formation can be gained by studying the effects of irradiation. Animals subjected to whole-body irradiation with X rays die from hæmorrhage, anæmia, and infections. Sometimes the blood-forming tissues are completely destroyed, and erythrocytes, leucocytes, and platelets disappear from the blood (but this can be prevented by shielding the spleen from radiation). When the blood-forming tissues are destroyed the irradiated animal may still survive if a suspension of bone-marrow from a normal animal is injected intravenously. The blood-forming tissues apparently return to normal a few days after the injection; and the regenerated bone-marrow and peripheral blood-cells in the treated animal are derived from the donor cells. Usually, of course, grafts from other animals do not take; but in these irradiated animals not only are the blood-forming tissues destroyed but the immunological mechanisms are damaged, and the irradiated animals accept grafts which would be rejected by normal animals. The regenerated tissues being derived from the donor tissues, the way is open to colonisation by further grafts, compatible with the donor, that would be rejected by the recipient animal if it had not been irradiated.

The obliteration of the heterologous-graft-destroying mechanism by irradiation raises the possibility of producing chimeras. Thus mice receiving a lethal dose of X rays can be saved by the injection of bone-marrow cells from a normal rat, and, in the treated mice, rat granulocytes are found in the blood-forming tissues and rat platelets in the blood. But, although these chimeras survive the radiation damage for a month, they may subsequently lose weight, and they have a high mortality-rate. Immunological intolerance of the foreign cells develops gradually; in some cases the host animal rejects the donor cells, and at times the foreign donor cells show an immunity response to the tissues of the host. The transplanted cells can transfer specific sensitivity to certain tumours from the donor to the irradiated recipient animal. The more dissimilar the donor and recipient, the larger the dose of myeloid cells required to save the irradiated animal and the shorter the survival-time, whereas isologous grafts among members of the same closely inbred strain of animals are the most effective.

The contribution of the study of irradiated animals to the elucidation of immunological problems is evident from the account of a symposium[1] sponsored by the Oak Ridge Laboratory in Tennessee. The symposium dealt primarily with bone-marrow transplantation in irradiated animals, but its scope included recent work on antibodies. Although the immunological work is not always directly connected with the main subject of the symposium, it is clearly related and forms a link with results derived from different methods of study. It is reported, for example, that turkey erythrocytes appear in the circulation of chimeras produced by grafting adult turkey spleen on to the chorioallantois or into the cœlom of chick embryos—an observation immediately reminiscent of work on radiation chimeras. The identity of the cells responsible for antibody formation has long been debated, and it was suggested at the symposium that a large pyroninophilic cell, derived from a primitive fixed reticular cell, may be responsible. After antibody has been formed as a result of the primary antigenic stimulus, these large cells are transformed into either small lymphocytes or mature plasma cells, which then disappear from the spleen and probably enter the circulation. These suggestions may be considered in the light of a hypothesis put forward by SPEIRS,[2] who postulates a two-stage effect. The first effect of introducing antigen into the body is migration of granulocytic cells into the area, and there is a specific eosinophil response if the host has been previously exposed to the antigen. The antigen induces specific enzyme formation in the eosinophil cells, which are then subjected to phagocytosis by reticulo-endothelial cells. These in turn utilise the specific enzymes from the ingested eosinophils to form antibodies. While antibody is being formed the reticulo-endothelial cells undergo nuclear changes, becoming increasingly pyroninophilic and being transformed into plasma cells.

It is becoming clear that, although antibodies appear to be normal serum-globulins modified so that they react specifically with the appropriate antigen, they are not formed by modification of pre-existing globulins but are synthesised de novo from the aminoacid pool in the body. The complete synthesis of an antibody molecule from

3. *Crossbow*, Spring, 1958, p. 10.
4. Chataway, C., Jones, C., Philpoft, T. *ibid.*

1. *J. cell. comp. Physiol.* 1957, **50**, suppl. 1.
2. Speirs, R. S. *Nature, Lond.* 1958, **181**, 681.

the constituent aminoacids takes less than half an hour—an achievement which dwarfs the mightiest efforts of the organic chemist. The chemical mechanism by which antibodies, or indeed any proteins, are synthesised is obscure, but it seems that specific nucleic acids from the cell nucleus play a part in organising the arrangement in proper sequence of aminoacids in the polypeptide chains of the protein molecule. Hypotheses as to how nucleic acids effect this organisation tend to become more complex, and a current suggestion is that the specific antigen modifies deoxyribonucleic acid in the cell nucleus, conferring a heritable change. This modified nuclear deoxyribonucleic acid, it is suggested, transfers appropriate specificity to ribonucleoprotein templates responsible for organising the synthesis of antibodies. These templates, in conjunction with high-energy phosphate bonds in adenosinetriphosphate, are regarded as activating aminoacids so that appropriate ones are brought into juxtaposition and react together to form the specific polypeptide chain of aminoacids. Once antibody formation has been initiated, the amount of antibody present in the body at any time is the resultant of a dynamic equilibrium between the synthesis of new antibody molecules and the degradation of old ones back to aminoacids. Antibodies to the same antigen are not identical and their breakdown-times vary. In the case of Forssman antibodies to sheep red blood-cells in a rabbit, for example, the half-life of the antibodies present varied from 2·8 to 5·6 days.

Turning to the interaction of antigens and antibodies, in the case of protein antigens it is the carboxylic-acid groups of the antigen that react with amino groups of the antibody molecule. Some indication of the size of the combining sites of antigen and antibody has been obtained in the case of antibodies to dextran. Inhibition studies show that the combining sites are larger than three glucose molecules and approximate to the size of a hexasaccharide. All evidence, however, indicates that antibodies are heterogeneous, and the antibody to any specific antigen cannot be regarded as a precisely constituted chemical compound of reproducible properties. In fact the antibodies present in a single animal at any one time differ widely. As more is learnt about immunology the subject becomes more complex rather than simpler.

Annotations

LEADERS IN RESEARCH

LEADERSHIP in research is a subject of great moment not only to scientists but also to the general community. Few people are better fitted to discuss this subject than Sir Charles Harington. In the first Russell lecture at St. Andrews [1] he had some telling things to say about the career of pure research—pointing out that, although its appeal to the young may be overpowering, there is a risk that in middle age it may prove emotionally unsatisfying, and that a little contamination with teaching or administration may be more satisfactory in the end for many people.

Sir Charles deals with leadership under the headings of Universities, Industry, and Government-supported research. He finds that in the long run leadership is a matter of unselfishness and kindness; in this the *Führerprinzip* has no place. The good leader helps to encourage collaboration between unrelated departments, to see possible fundamental discoveries in routine work, and to guide interest into paths likely to be profitable; and he is always on the alert to spot talent and encourage originality. Thus he aims to foster in the universities new ideas and lively teaching; in industry any work, bearing on the business, which has possibilities of originality; and in Government-supported institutions freedom combined with use of the vast resources which only the State can provide to foster work of value to the public. Sir Charles is as hesitant to direct the leaders as he suggests they should be in directing their own staffs; but he gives them, largely by implication, detailed advice which illuminates the way in which he has learnt to exert the best kind of leadership himself.

He says, quite rightly, that he is talking about leadership, and therefore gives little space to the kind of research that is not susceptible of direction. But it may be thought that he dismisses too easily the kind of research which consists, in his own words, in " seeing correlation between items of knowledge at first apparently quite unrelated ". At its best such work (of which one example is Hunter's sudden perception of the relevance of the flushing of the deer's antler, after tying the artery, to the possible treatment of a popliteal aneurysm) requires a mental activity that was described by Livingston Lowes in *The Road to Xanadu* as the essence of genius. Sir Charles Harington maintains that this kind of discovery was characteristic of the early history of Science, and he adduces the sudden leaps forward in the arts, followed by " periods of stunned assimilation ", as a parallel. He contrasts this with the continuous growth of Science today, with fact being piled on fact, each advance depending heavily on what has gone before. This analysis ignores the fact that the innovators in the arts were seldom the people who exploited the ideas: fugues were not invented by Bach, symphonies by Beethoven, or leitmotivs by Wagner. The impact of genius on research is as significant today as it ever was: if thought of in terms of discoveries per half-century, it is even more so. What else was Fleming's original observation which led to the discovery of penicillin? Sir Charles rightly stresses that a leader may help his staff to draw the significant conclusion from routine observations and may do much to encourage the power of observation. It is surely useful for the man who can jump to far-reaching conclusions to have a team working with him, who not only exploit the original idea but learn at first hand the significance of the notion that such ideas are possible.

1. Leadership in Scientific Research: Sir David Russell memorial lecture no. 1. By Sir CHARLES HARINGTON. London: Oxford University Press. 1958. Pp. 27. 3s. 6d.

RETROLENTAL FIBROPLASIA

Crome [1] has lately described, under the title " retrolental fibroplasia ", 2 cases of bilateral detachment of the retina in infancy. In the first of these, a premature baby had received supplemental oxygen after birth, and besides retinopathy had a patent ductus arteriosus, renal calcinosis, and some evidence of encephalopathy. In the second, a full-term infant who was not subjected at any time to hyperoxia had detachment of the retina

1. Crome, L. *J. Path. Bact.* 1958, **75**, 163.

together with widespread congenital abnormalities. In discussing these and other similar cases, Crome supports the view that retrolental fibroplasia is not always a local intraocular condition, but is only one manifestation of a disease that may involve other tissues, especially the central nervous system.

When Terry [2] introduced the term "retrolental fibroplasia" in 1942, he intended to differentiate the lesions he was describing from the heterogeneous group of conditions long known under the nebulous but useful title of "pseudoglioma"—a group including all those conditions wherein the white pupillary reflex of retinal glioma was simulated, ranging from developmental abnormalities (such as persistent hyperplastic vitreous) to acquired changes (such as metastatic uveitis). Terry suggested three criteria for the condition he named: prematurity, bilateral lesions, and their first appearance after birth. Associated somatic or neurological abnormalities were not included. It is now common knowledge that the disease for which these criteria were stipulated results from the administration of supplemental oxygen to the premature infant. The causal relation of ambient hyperoxia to intraocular changes is very striking and has been abundantly proved, both by the production of analogous changes in laboratory animals [3–5] and by the virtual disappearance of the condition when administration of oxygen is controlled.[6 7] Thus exposure to hyperoxia may now be added to the three original criteria.

In 1946, however, Krause [8] reported 18 cases which were similar to those of Terry, but in many of which there was also mental retardation, hydrocephalus, or other cerebral lesions; and Krause therefore proposed the term "encephalo-ophthalmic dysplasia". Rereading his paper with the knowledge we possess today, we find that Krause was applying the name to cases of different types; in 5 the eye changes were clearly congenital. Examples of so-called retrolental fibroplasia have been described in which either oxygen was not given [9–11] or the infants were full-term.[12 13] But close examination of these reports shows that the name is being applied descriptively to conditions ætiologically dissimilar—the later stages of oxygen-induced retinopathy are in no way specific and may result from a wide variety of causes. Similar intraocular damage has been observed not only in the other pseudogliomas but also in hereditary diseases such as incontinentia pigmentosa,[14] and it has been induced experimentally both by anoxia [15] and by vitamin deficiency.[16]

Ending this confusion will depend largely on whether oxygen-induced retinopathy of prematurity may be accepted as a distinct entity not essentially associated with extraocular abnormalities. Unfortunately it is impossible to be certain that the effects of oxygen exposure are confined to the eye, because there is a lack of data on the incidence of general somatic abnormalities in cases with and without retinopathy, there is no agreement on the significance of associated mental retardation,[17 18] and, the disease not being lethal, necropsy reports are few. Nevertheless, it seems that there is no obvious pattern of general somatic or neurological abnormalities consistently associated with oxygen-induced retinopathy; most cases are entirely free from extraocular abnormalities, and there is good evidence that in laboratory animals the damaging effects of long-continued hyperoxia are confined to the retina.[19 20] Hence there are no sure grounds for believing that any neural or somatic abnormalities are ætiologically related to concomitant oxygen-induced retinopathy.

What then are we to call the type of case reported by Crome? It would probably be better now to abandon the name retrolental fibroplasia (which in any case is not particularly appropriate) and to replace it by "oxygen-induced retinopathy of prematurity", an extension of the name first proposed by Heath,[21] and to reserve this strictly for cases where the retinopathy develops after birth in premature babies subjected to hyperoxia. The old term "pseudoglioma" may be retained for cases where the cause is uncertain or unknown. Thus Crome's first case would be termed "oxygen-induced retinopathy of prematurity with associated abnormalities" and his second case "pseudoglioma with associated abnormalities".

PROGNOSIS IN RHEUMATOID ARTHRITIS

In trying to decide whether to use or to withhold a potentially dangerous drug in a case of rheumatoid arthritis the clinician must consider not only the risk and the possible benefits of treatment but also the seriousness of the disease in his patient. Accurate information about the benefits of treatment can be gleaned only by the laborious method of controlled clinical trial. Information about prognosis is no less difficult to obtain, involving as it does protracted study of a large enough group of patients to contain examples of the many types of course which the disease may follow. Such studies have yielded fairly consistent figures for the amount of disability to be expected in each such group after various periods of time. They have also made it possible to predict, though not as yet very accurately, the probable course in any individual patient.

The rheumatic unit in Edinburgh has kept under close observation a group of patients with rheumatoid arthritis admitted to hospital between 1948 and 1951. Most of these patients have been watched for six years, and the changes in their condition have been described by Duthie and his colleagues.[22] On admission to hospital 22% of the patients were unable to work or to look after themselves without help. Incapacity of this degree must have arisen mainly from active inflammation in the joints rather than from advanced irreversible deformity and damage; for at the time of discharge from hospital only 0·4% remained in this lowest category of functional capacity. This group of severely disabled patients is bound to be enlarged, as the years pass, by the added restrictions of old age and

2. Terry, T. L. *Trans. Amer. Ophthal. Soc.* 1942, **40**, 263.
3. Ashton, N., Ward, B., Serpell, G. *Brit. J. Ophthal.* 1953, **37**, 513.
4. Patz, A., Eastham, A., Higginbotham, D. H., Kleh, T. *Amer. J. Ophthal.* 1953, **36**, 1511.
5. Gyllensten, L. J., Hellström, B. E. *Acta pædiat., Stockh.* 1954, **43**, suppl. 100, p. 131.
6. Yankauer, A., Jacobziner, H., Schneider, D. M. *N.Y St. J. Med.* 1956, **56**, 1474.
7. Parmelee, A. H., Jr., Pilger, I. S., Austin, W. O. *Calif. Med.* 1956, **84**, 424.
8. Krause, A. C. *Arch. Ophthal., Chicago*, 1946, **36**, 387.
9. Coxon, M. W. *Trans. Ophthal. Soc. U.K.* 1951, **71**, 591.
10. Minton, J., Cole, P. *Brit. med. J.* 1951, i, 450.
11. Gordon, H. H., Lubchenko, L., Hix, I. *Bull. Johns Hopk. Hosp*, 1954, **94**, 34.
12. Reese, A. B., Stepanik, J. *Amer. J. Ophthal.* 1954, **38**, 308.
13. Reese, A. B., Payne, F. *ibid.* 1946, **29**, 1.
14. Scott, J., Friedmann, A. J., Chitters, M., Pepler, W. J. *Brit. J. Ophthal.* 1955, **39**, 276.
15. Ingalls, T. H., Tedeschi, C. G., Helpern, M. M. *Amer. J. Ophthal.* 1952, **35**, 311.
16. Warkany, J., Schraffenberger, E. *Arch. Ophthal., Chicago*, 1946, **35**, 150.
17. King, M. J. *ibid.* 1950, **43**, 694.
18. Potter, C. T. *Proc. R. Soc. Med.* 1954, **47**, 715.
19. Ashton, N. *Amer. J. Ophthal.* 1955, **39**, 153.
20. Patz, A. *ibid.* 1954, **38**, 291.
21. Heath, P. *Arch. Ophthal., Chicago*, 1950, **44**, 245.
22. Duthie, J. J. R., Brown, P. E., Knox, J. D. E., Thompson, M. *Ann. rheum. Dis.* 1957, **16**, 411.

by fresh onslaughts of active disease; that it should still account for no more than 9% of the whole series six years after discharge is gratifying. Although the criteria used in similar investigations elsewhere have varied, this figure is close to the 10% found by Ragan [23] as the proportion of patients confined to bed or chair after five years of observation. At the opposite end of the scale are the patients—11·3% of the total—who were fit for all normal activities when they left hospital. After two years, in which some patients with moderate disability improved, the figure had risen to 28%. During the next four years this group diminished only slightly. This is again in keeping with experience in the U.S.A.—in New York Ragan found no remaining evidence of arthritis in 26% of his cases (with another 22% suffering no more than occasional joint pains), and in a carefully analysed series from the Massachusetts General Hospital Short et al.[24] found 13% of their patients in remission after an average of fourteen years of observation.

In the Edinburgh study treatment consisted in a " basic regimen " in hospital of rest in bed, the application of plaster splints to affected joints, the largest tolerable doses of aspirin, physiotherapy, and a graduated return to the highest attainable functional level. The Boston patients were kept in hospital for a shorter time than those in Edinburgh; otherwise the programmes of treatment did not materially differ. The two groups of investigators agree that patients admitted to hospital early in the course of their disease fare better than those admitted later; in Boston 37% of those admitted in the first year of their disease were in remission after observation extending in the majority to at least five years from discharge; only 4·7% of patients admitted later in the course of their disease did as well as this. In Edinburgh 43% of patients admitted in the first year but only 10% of those admitted between the fifth and tenth year were free from any restriction in activity six years after discharge.

The time of admission to hospital largely reflects the pattern of the disease: thus cases admitted soon after onset will in general be those in which the disease has progressed rapidly, and in which disability arises mainly from inflammation in the joints rather than from irreversible anatomical damage. In cases admitted later the disease clearly has either failed to abate after several years of continuous or intermittent activity, or has produced permanent damage. It is not surprising that these two broad groups should differ in prognosis. The Edinburgh report draws attention to two groups not included in its material—milder cases in which treatment in hospital is not thought necessary, and cases in which the patient never seeks medical help. The second of these categories has been estimated [25] to account for 38% of women and 19% of men with rheumatoid arthritis.

As regards other considerations helpful in prognosis the Edinburgh and Boston groups agree that men do rather better than women, and that an acute onset and a rapidly progressive course in the early months is favourable; a good response to treatment in hospital also augurs well for the future. Finally it is becoming clear that the presence or absence in serum from cases of rheumatoid arthritis of the factor which agglutinates sensitised sheep erythrocytes has an important bearing on prognosis, in that patients with a negative agglutination test do well. Duthie and his colleagues found a direct relationship between functional capacity and the concentration of the agglutinating factor.

Although patients admitted to hospital early in their disease are a selected group, and probably likely to fare better than average however treated, few clinicians would seriously doubt the value of a period of treatment in hospital. Like most of the other elements in the " basic regimen ", treatment in hospital has not been, and should not be, submitted to controlled trial. The patients whose course has been so closely studied in Edinburgh were treated by these sound and uncontroversial methods in a unit largely concerned with the problem of rheumatoid arthritis. While there are no comparable figures for patients who have had less comprehensive care, there can be little doubt that the programme of continuous treatment and supervision, supplemented by skilled assistance in the solution of domestic and employment difficulties, contributed to the maintenance of independence and the ability to earn a living in so high a proportion of patients. It is against results of this sort that any alternative or supplementary method of treatment must be measured.

23. Ragan, C. *J. Amer. med. Ass.* 1949, **141**, 124.
24. Short, C. L., Bauer, W., Reynolds, W. E. Rheumatoid Arthritis. London, 1957.
25. Kellgren, J. H., Lawrence, J. S. Aitken-Swan, J. *Ann. rheum. Dis.* 1953, **12**, 5.

OLD PEOPLE AND THEIR FAMILIES

An important investigation into the relations between old people and their families is described by Mr. Peter Townsend,[1] who has based his observations on old people selected at random in Bethnal Green. He visited over two hundred families, and it speaks volumes for his tact and patience that his searching questions were readily answered. Several notable facts stand out. Comparatively few old people were seriously isolated. Many who lived alone had relatives nearby but preferred to maintain a " supported independence ", seeing their families every day but not sharing a roof with them. Their family interests embraced three generations, and each old person had on an average thirteen members of such an extended family living within a mile and kept in touch with most of them. The elderly women were by no means passengers, and although they had much help from female relatives they made their own contribution when they could by providing midday meals, by caring for grandchildren, and in other ways. This contribution by the grandmother gives her a permanent and valued role in the family and contrasts with the tragic uselessness that retirement brings to many men, when their income falls and they are excluded from their former social activities and cut off from their friends.

About one in five of the old people had no children to support them. Not all of these " isolates " complained of feeling lonely; a sense of loneliness affected principally those who had recently been bereaved or separated from their families, a group which Townsend calls " the desolates ". But those without children were making the biggest demand on the social services. At a local geriatric hospital the proportion of childless and unmarried among the patients was 43%, compared with 18% among the elderly population of Bethnal Green as a whole; and figures were similar among the occupants of a local welfare hostel and those in receipt of home help. Townsend produces convincing figures to show that, as the variations of family circumstances are followed through to those with sons and daughters-in-law but no daughters, to the childless, and finally to the unmarried, the availability of family help diminishes and the claims

1. Townsend, P. The Family Life of Old People. London: Routledge & Kegan Paul. 1957. Pp. 284. 30*s*.

on the social services increase. This is particularly noticeable in single or widowed men who once they become infirm are much less independent than old women. Various estimates suggest that but for the help given by female relatives the number of old people seeking admission to geriatric hospitals and welfare homes might be three to five times greater than it now is.

About two-fifths of Townsend's subjects were infirm or living with an infirm spouse, and one in three had been in hospital within the past five years. (A similar proportion of "infirmity", defined as confinement to a house or restriction of outdoor activity, was found in Sheffield [2] and in a London suburb [3].) One in eight had caused a relative to give up paid work in order to look after them, and at least to this extent were imposing a strain upon their families.

What can be done to support the family in its task? Townsend suggests a comprehensive family help service, to experiment with alternatives to institutional care—boarding out the isolated, transforming old houses into self-contained one-room flats with housekeepers in charge, and finding accommodation for relatives. This service would also extend the existing home-help arrangements to relieve overburdened relatives in the evenings and for holidays. Already the home-help service is of the greatest value and could profitably be expanded [4]; and, as Chalke [5] has observed, its worth cannot be measured merely in terms of hours of work. In a few places night attendants enable the relatives of old people who are restless at night to get an occasional unbroken night's sleep. Sometimes an infirm person cannot stay at home because a daughter cannot afford to give up her job to look after him. A constant-attendance allowance, such as is already paid to some war pensioners, might make all the difference, and Mr. Townsend proposes, as he explains in his letter on p. 910, that this allowance be extended to include bedridden old-age pensioners.

The strain on the family can also be eased by anything which contributes to the old person's physical and mental independence. Fry [3] suggests that it is the duty of the family doctor to get to know all the old people on his list and to keep in touch with them. On a larger scale, the welfare department of the city of Salford is to be commended for making its services known by giving every person reaching pensionable age a booklet which contains a reply-paid postcard for those who desire a visit. The health visitor, at once a nurse and a social worker, can, by regular visits, do much to prevent that gradual deterioration in old people which goes on slowly until, in Townsend's words, "a neighbour sees a bottle of milk standing on the doorstep long after it has been delivered, makes inquiries and sends for an ambulance". Old people's clubs and unofficial friendly visiting by volunteers also preserve an interest in life and the self-respect that goes with it. "Meals on wheels", a voluntary service which is well established in many towns, gives a useful boost to morale, and in a few places help with laundry has been arranged. Chiropody also is important in keeping the elderly fit. Finally, domiciliary physiotherapy may have a useful future, as has been shown in Belfast.[6]

Townsend is right to suggest that these many services should be "closely connected with the work of family doctors". Walsh [7] has discussed the value of these services in general practice, and Fry proposes that the medical officer of health should be available for domiciliary visits as "a consultant in social medicine". Others, including apparently the Minister of Health,[8] see here one of the special functions of the geriatrician; and a good geriatric outpatient department with an almoner, physiotherapist, and occupational therapist working together, when necessary within the framework of a day hospital, will undoubtedly achieve more and more in the future.

2. Hobson, W., Pemberton, J. The Health of the Elderly at Home; p. 141 London, 1955.
3. Fry, J. *Brit. med. J.* 1957, ii, 666.
4. Wright, C. H., Roberts, L. *Lancet*, Feb. 1, 1958, p. 254.
5. Chalke, H. D. *Brit. med. J.* 1957, ii, 694.
6. See *Lancet*, Jan. 4, 1958, p. 36.

TIETZE'S DISEASE

In 1921 Tietze [9] described four cases of "swelling of costal cartilages of unknown ætiology, insidious in onset, spontaneously painful, not associated with constitutional disturbances, and of a prolonged, fluctuating course". He believed that this might be a cartilage dystrophy, possibly associated with wartime malnutrition. In Britain the disorder was first noted in 1942 by Gill et al.,[10] who described five cases in young soldiers and considered that symptoms and signs might be present for a very long time. Histological examination of costal cartilage in one of their cases showed no departure from normal. Deane [11] found that the second costal cartilage was most commonly affected, and he noted that a painful swelling at onset might be associated with a respiratory infection; the pain diminished but the swelling often remained. The histological changes in biopsy specimens of costal cartilage they regarded as variants of normal. They suggested that the disorder originated either in a small tear or in rheumatoid involvement of a ligament. Beck and Berkheiser [12] described four cases in which the costal cartilage was exposed at operation and was found to be acutely buckled forward. They suggested that this buckling was due to disease of the underlying ligament, but no specimen of ligament was taken for examination. The difficulties in the differential diagnosis of this condition have been indicated by Wehrmacher [13]; but there is no doubt that familiarity with the syndrome makes its recognition fairly simple.

Karon et al.[14] have now described thirteen new cases. Their criteria of diagnosis are: (1) the presence of a painful, tender mass in one or more costal cartilages; (2) evidence that the mass is a distinct enlargement, not present normally, which eventually subsides; and (3) the absence of a definite alternative ætiological diagnosis. The swelling and tenderness usually make the diagnosis immediately apparent, and radiography and hæmatological investigations eliminate underlying disease of rib, lung, or heart. There is no specific treatment, and in most cases reassurance and local heat and analgesics suffice. Surgical excision should be unnecessary, provided the diagnosis is not in doubt. Local infiltration of hydrocortisone in patients who do not respond immediately to simple measures may be expected to bring prompt relief from pain together with diminution of the swelling.[15]

PRINCE PHILIP, DUKE OF EDINBURGH, has accepted the invitation of the British Medical Association and the Canadian Medical Association to be their president for 1959–60. The associations are holding their annual meetings jointly in Edinburgh in July, 1959.

7. Walsh, R. C. *in* Old Age in the Modern World; p. 83. Edinburgh, 1955.
8. H.M. (57)86.
9. Teitze, A. *Berl. klin. Wschr.* 1921, **58**, 829.
10. Gill, A. M., Jones, R. A., Pollak, L. *Brit. med. J.* 1942, ii, 155.
11. Deane, E. H. W. *Lancet*, 1951, i, 883.
12. Beck, W. C., Berkheiser, S. *Surgery*, 1954, **35**, 762.
13. Wehrmacher, W. H. *J. Amer. med. Ass.* 1955, **157**, 505.
14. Karon, E. H., Achor, R. W. P., Janes, J. M. *Proc. Mayo Clin.* 1958, **33**, 45.
15. Celio, A., Nigst, H. *Schweiz. med. Wschr.* 1956, **86**, 1150.

Symposia

TRAINING

The Betterment of Human Effort

A SYMPOSIUM arranged by the Ergonomics Research Society in Bristol on April 13–16 tackled the Problems of Training; and the discussion ranged as widely as the title suggested it would. As Mr. M. G. BENNETT, of the operational research division of British Railways, remarked, ergonomics is a funny subject: for one thing, its scope is certainly very broad indeed. One of the difficulties which face those engaged in the study of man in relation to his work—industrialists, psychologists, doctors of several sorts—is that there are huge practical tasks to be completed in industry and elsewhere at a time when relatively little is known about the theory of the subject. And with so many different people involved, meetings of the kind which the Ergonomics Research Society arranges are an enormous help. Last week's meeting was well attended; but perhaps some groups vitally concerned were not as fully represented as they should have been. At the close of the symposium, Prof. R. C. BROWNE (Newcastle upon Tyne) said he would like to see at next year's meeting more young executives from industrial organisations, more lecturers from university departments of engineering and colleges of technology, and more young doctors from industry.

The account that follows includes only some of the papers read at the symposium and we have given particular attention to the contributions with a medical content. This unbalanced picture does not therefore record many important matters concerning training for skilled employment, which occupied much of the symposium's time.

TRAINING AND THE HEART

Dr. M. J. KARVONEN (Helsinki) discussed the effects of physical training on circulatory dynamics. The " trained " cardiovascular system might be said to be one in which a high cardiac output was associated with a high oxygen uptake. The heart-volume was usually increased and the resting pulse-rate was often but not always slow. The diffusion capacity of the lungs was closely related to the condition of training of the cardiovascular system; and diffusion capacity at rest showed a negative correlation with pulse-rate during standard exercise and with age. Several pulse-rate tests had been used to assess the degree of training; and the step-test pulse-rate had been found to be closely correlated to the resting rate, the maximum rate, and the increase in rate between rest and work. The heart-volume of a group of long-distance runners was round about 600 ml. per sq. m. of body surface; for sprinters the figure was between 300 and 400 ml. per sq. m. During a hard training season the size of an athlete's heart could increase considerably. To produce a drop in the pulse-rate during standard exercise, training exercises must raise the pulse-rate above 130–140 per min. Below this level, Dr. Karvonen had found no training effect on the cardiovascular system, and he concluded from pulse-rates commonly observed during occupational work that such work had little training effect on heart function. The gentle trot to the station seems, therefore, of little value from this point of view: it is better to leave three minutes later and go in for a full-blooded sprint.

Training, it was said, made man better adapted to exercise; but, Dr. Karvonen added with a twinkle, it might also be argued that lack of training made man better adapted to rest. In fact the work done by the trained heart at rest was half to two-thirds less than that performed by the untrained heart. The higher maximum cardiac output conferred a greater capacity for work and under certain conditions (e.g., in heat and while flying under accelerating forces) this was a particular advantage.

Some people said that training of the cardiovascular system was dangerous, but Dr. Karvonen had no such fears. At a few critical moments, a trained cardiovascular system was a distinct help. Women with small hearts were more likely, it seemed, to give birth prematurely than heartier mothers; and a study of champion skiers' prospects of reaching old age showed that their insurance companies had little to worry about. Dr. Karvonen concluded modestly that the evidence indicated that exercise was " not acutely toxic to the organs ".

TRAINING AND THE LUNGS

Dr. J. E. COTES (Cardiff) described some investigations he had carried out with a colleague, Mr. F. Meade, into the effect of training on pulmonary ventilation during exercise. 11 young men were studied before and three times during their National Service preliminary training course. Ventilation, end tidal pCO_2, and body-temperature were measured at rest and while walking at $3^1/_2$ m.p.h. on a motor-driven treadmill. The rate of working against gravity during the treadmill walk was calculated from the vertical oscillation of the body. During the weeks of their training, the men's ventilation minute volume, total energy expenditure, and vertical work done all decreased. The reduction in energy expenditure could be fully accounted for by the reduction in lift work. A graph of the rate of energy expenditure against rate of lift work gave a straight line—the line of constant efficiency of conversion of chemical to mechanical energy. The findings suggested that the greater part of the reduction in pulmonary ventilation with training was due to increased economy of performance. There was also evidence of increased arterial oxygen tension as the result of training. No change was noted during training in the ventilation equivalent for oxygen, perhaps because the work level was well below that necessary to induce anærobic metabolism. Dr. Cotes suggested that the men used less air in the performance of a standard task by virtue of greater economy of effort and more efficient aeration in the lungs, with a consequent increase in arterial oxygen tension.

PHYSIOLOGICAL BASES OF TRAINING

Prof. A. HEMINGWAY (Leeds) spoke of the two main types of training: the imposed disciplining of patterns of movement and the development of resources so that tasks previously impossible came within the individual's capacity. If a worker was trained according to physiological postulates concerning movement and posture then he could work more economically. Improvement with training came as the result of better coordination of muscles and the elimination of unnecessary movements. The extension and improvement of the physiological capabilities of the individual enabled him to perform a given task with less encroachment on his reserves or with greater efficiency. In artistic activities or sport, however, excellence of performance, as judged by skill, endurance, or strength, counted for more than efficiency; and training was then directed at exploiting the potentialities of the body and at the development of fitness for a task, " the growth of the wisdom of the body ".

Professor Hemingway mentioned Dr. Roger Bannister's views on the importance of a certain mental approach in the athlete that enabled him to endure when physical discomfort was intense; and he also illustrated some training schedules of the repetition type, involving alternate fast running and recovery phases, that many trainers now believed to be the best way of bringing a middle- or long-distance runner to peak performance.

EIGHTEEN MILES A DAY

The effect of short periods of exercise, lasting a few days, on the fitness of relatively untrained young men has not been closely studied, and Dr. J. V. G. A. DURNIN (Glasgow) decided to look into the matter. 44 young men in an R.A.F. unit, who had had almost no exercise, were divided in four groups: one group continued to take almost no exercise, the second walked 6 miles a day, the third 12 miles, and the fourth 18 miles over hilly country on rough tracks and metalled roads. Cardiorespiratory function was measured during a standard exercise on the treadmill and these measurements were made before the beginning of training, at the end of five days' exercise, and at the end of ten days. In all the marching groups, there was a significant decrease over the training period in the exercise heart-rate compared with the controls, and the 12-milers also showed a significant decrease in pulmonary ventilation and oxygen consumption. In no group was the change in heart-rate $1–1^1/_2$ minutes after exercise significant. Perhaps the most surprising of Dr. Durnin's observations was the casualty-rate from sore feet—only 2 men incapacitated for half a day each.

During discussion it was asked what a high mark in the Harvard step test indicated; and one answer was " fitness to do the Harvard step test ". But Dr. O. G. EDHOLM (London) had more confidence in it as a measure of physical fitness, even though it was not ideal.*

HARD WORK

Mr. J. G. FLETCHER (London) had found that " well-motivated " young men could increase their maximal amount of physical work very rapidly by exercising once a day to exhaustion, using a constant high rate of work. The physiological changes were investigated and the rates of improvement compared in different subjects. A simple work test (stepping up and down on a 22-inch bench thirty times a minute for as long as possible) was used, so that the acquisition of skill played no great part in any improvement. The reactions of 10 healthy men between 20 and 46 were studied. At first men in poor shape could continue stepping for only about a minute, but a cross-country runner was able to carry on for 35 minutes. Endurance improved rapidly with repetition, and 3 non-athletes achieved 15 minutes. An ex-athlete and swimmer got up to 30 minutes from a poor start in only 8 attempts; an Antarctic explorer took about twice as many attempts to get up to 15 minutes, and a sedentary worker reached 15 minutes only after about 30 attempts. The resting heart-rate was lower after training than before it, and recovery rate after work was more rapid. Those people who were retested after an interval without training all retained some improvement. Mr. Fletcher concluded that in this type of exercise maximal output could be much increased provided (and there was the rub) " subjects are prepared to work to exhaustion ".

* In a letter on p. 912 a correspondent refers to variations in the technique of performing this test.—ED. L.

INCREASING MUSCULAR STRENGTH

Prof. E. A. MULLER (Dortmund) looked on a muscular contraction as having two different effects—one preventing atrophy and the other increasing strength. Atrophy, he had found, was prevented by one short static contraction daily of at least 20% of the maximal strength. At least one short static contraction a week of 35% maximal strength was needed to ensure increase in the strength of a muscle. Muscular strength could be increased much more rapidly by daily contractions, but the benefit was lost correspondingly quickly after " training " was stopped. Professor Muller and his colleagues at the Max-Planck-Institut fur Arbeitsphysiologie had found, however, that there was nothing to be gained by increasing the training stimulus by stepping up the daily number, duration, or force of the contractions. Strength reached by quick training could be kept undiminished by one contraction a fortnight, and maintained in that way for several weeks, it would then persist without further training.

NOISE AND TRAINING

Mr. D. E. BROADBENT (Cambridge) had been investigating the effects of noise early in training upon subsequent performance. The design of previous experiments had divided the subjects in such a way that half learned a task in quiet conditions and half in noise. The environments were then reversed and the effect on performance noted. In general it was found that those who had learned the task in quiet performed better during the second session—in other words, and not unexpectedly, the conditions under which a man first met a task affected his subsequent performance when conditions improved. In several experiments it was noted that the subjects learning in noise did badly throughout the experiment, including their subsequent performance in quiet. These experiments were not entirely satisfactory in that there were only two groups (noise→quiet, and quiet→noise), so that the findings could have been accounted for if a practised task was done better in noise than in quiet. Mr. Broadbent, therefore, added a third group (quiet→quiet) and repeated the experiment. The subjects memorised a six-figure number shown to them: the number was concealed, a four-figure number displayed, and the subjects had to subtract one from the other in their heads. The time they took for each problem was taken as the measure of efficiency. At the first session of tests the two groups in quiet improved their times, but the group in noise got worse. At the second session, after the first two groups had reversed their environments, the noise→quiet group again deteriorated considerably, while the quiet→noise subjects maintained their efficiency (as judged by time per problem) almost unimpaired, and the quiet→quiet competitors went on improving happily. These findings emphasised the importance of paying as much attention to the environment of workers in training as to that of workers in the production line.

PRACTICE MAKES IMPERFECT?

Dr. O. GRAF (Dortmund) reported some more interesting work at the Max-Planck-Institut. In two experiments with 4 female workers spaced practice (4 fifteen-minute spells daily) at an operation for punching holes in cards was compared with continuous practice (eight hours daily). The striking finding was that spaced practice over a period of fourteen days produced surer movements and faster work than continuous practice spread over four months. Other types of work studied in this way were

bradawling and riveting. The influence of fatigue in continuous practice might, Dr. Graf suggested, lead to the development and retention of incorrect movements which slowed down the operation.

SKILL AND NATURAL SELECTION

Imagine a learner, suggested Dr. E. R. F. W. CROSSMAN (Reading), with a repertoire of different methods for doing the job he is learning, each method with its own probability (strength) and time. If the methods taking longer were negatively selected, many methods would increase in strength. Laboratory and industrial observations with element-by-element recording apparatus had shown that the speed of an operation increased through a change in the shape of the frequency-distribution of element-times rather than from a bodily shift in its position. These and other findings suggested that skill was acquired by the unconscious selection of appropriate methods from an initially random assortment. Selection must depend on something more than conscious knowledge of results—perhaps on unconscious perception of the time taken by each element. More likely, however, Dr. Crossman thought, was the unconscious selection by the operator of those methods which required least work on his part, so that increased speed was secondary to reduced effort.

CASES AND PAVING-STONES

Dr. F. H. BONJER (Leyden) had measured energy expenditure, pulse-rate, working time, and amount of work performed during certain jobs. Various methods of handling cases while stowing them in the hold of a ship had given the following results:

	Tilting on long edges	*Tilting on short edges*	*Tilting on edges with hook*	*Tilting on angular points*
Energy expended (kg.-cal. per case)	2·2	2·5	2·2	1·2
Heart-beats per case ..	135	136	152	123
Work done (kg.-m. per case)	111·3	107·6	107·6	71·4

The best method, judged by these figures, was to manhandle the case on its points, and Dr. Bonjer showed diagrams to illustrate that workers using his method were able to keep a more upright posture than those using other methods.

Dutch paving-stone layers are divided into three schools —standers, sitters, and kneelers—and Dr. Bonjer produced a film to show how each school worked. The sitters had a little one-legged stool, which looked uncomfortable, and the kneelers seemed none too happy either; on appearances the standers certainly had it. But both standers and sitters, it was found, were laying about 20 stones a minute for the same rate of energy expenditure, and kneelers in the Hague could do just as well, though elsewhere kneelers' rate of laying was not so good. But the kneelers had the champion on their side, a remarkable performer who came from a well-known family of pavers and who put down 30 stones a minute. These investigations demonstrated the complexities that individual variations could introduce into a group study.

PROCRUSTES AND THE WORKING MAN

Procrustes was a fabulous robber of Attica who made his victims conform to the length of his bed by stretching or mutilation; and Dr. F. V. TAYLOR, of the U.S. Naval Research Laboratory, Washington, introduced what he called a " cacophonous note " with a sprightly attack on the " procrustean approach to the optimisation of man-machine systems." Is it better to adjust the human component to the requirements of the system (as Procrustes did) or to enhance system performance by adjusting the mechanical elements to fit the man? Dr. Taylor announced unashamedly that he proposed to arrange his data (which could be made to support either approach) so that Procrustes would lose. And lose he apparently did. For example, in an experiment with operators learning to use two tracking systems (one with a simply learned position control and the other with a harder-to-master acceleration control), training could make the operators of the acceleration control as efficient as those using the simpler device; but they reverted to their original order of merit when the operators were subjected to any one of a wide variety of " task-induced stress situations ". Stress disrupted most readily the system which put most dependence on the man; and the procrustean approach might therefore obscure important operational deficiencies of a man-machine system.

VENEREAL DISEASES

A W.H.O. seminar on venereal diseases was held in Tokyo on March 17–29, under the presidency of Dr. M. YAMAGUCHI. Information was exchanged about venereal disease in the Western Pacific region of W.H.O.

It is evident that in many countries syphilis has declined since 1945. No evidence of widespread endemic non-venereal syphilis was forthcoming, though cases were reported from French Polynesia. Yaws is, however, a problem in Laos, Malaya, the Philippines, and the Pacific Islands. In general syphilis is being well controlled with penicillin.

Gonorrhœa, on the other hand, after a post-war fall is again increasing in many areas, and is not responding to repository penicillin as well as previously. Failure-rates of up to 30% are being noted on higher doses than those giving 95% success only a few years ago. The gonococcus seems to be becoming less sensitive to penicillin. Whether this is because the organism has developed new metabolic processes or, as seems more likely, because of repeated selection of less sensitive strains is not definitely known. The need seems to be to provide higher peaks of blood-penicillin by means of shorter-acting penicillin. Such preparations lack one advantage of repository penicillins—the long period of penicillinæmia during which the consorts can be secured for treatment before the patient becomes reinfected. Mixed preparations containing both short- and long-acting penicillins may provide the answer, but the situation is disquieting.

Non-gonococcal urethritis is emerging as diagnostic facilities for gonorrhœa improve. It is commoner than gonorrhœa in some Japanese clinics. Of the other venereal diseases, chancroid is thought to be the most important, especially where provision for dark-field examination is inadequate. In some countries chancroid is several times commoner than primary syphilis, and, if no dark-field examinations are made, cases of chancroid with positive serological tests (due to late latent syphilis or to past yaws) will be unfairly classified as penicillin failures when—as is likely—the tests fail to reverse.

It was agreed that there is much more venereal disease in the area than has been reported in the official returns. Special one-day surveys in Japan have indicated that 6–10 times the number of cases actually reported may be present.

PENICILLIN REACTIONS

Fatalities from penicillin reactions have caused alarm in some countries—notably Taiwan, where some 17 deaths have been reported. All countries have experienced deaths from penicillin anaphylaxis which, because patients die in the doctor's consulting-room rather than in hospital, attract attention and publicity. Penicillin anaphylaxis is commoner after intravenous than after intramuscular injections, and after any injection than after oral administration. Reactions are thus commoner with the more quickly absorbed preparations, which are those most used in general practice. They are much less common in venereal-disease clinics, where repository

penicillins are used. In a recent W.H.O. survey of over 600,000 patients, there was only 1 death from penicillin in 70,000 treated; and in the W.H.O.-assisted venereal-disease-control programme in Taiwan there was only 1 death in 44,000 treated.

Many of the severe reactions have arisen in persons with a previous history of allergy, especially to penicillin. It was suggested that many fatalities can be avoided if a careful preliminary history is taken. Important in the prevention of such reactions is the restriction of the use of the drug to only well-established indications and of its sale to the production of a doctor's prescription (antibiotics may be bought over the counter in many countries of the Western Pacific region). Some deaths can be prevented by resuscitating drugs, and all doctors who administer penicillin should have on hand an emergency kit containing appropriate syringes, adrenaline, nikethamide, hydrocortisone, an anti-histamine drug for injection, aminophylline, and, if available, penicillinase.

LIVER DISEASES

A SYMPOSIUM on liver diseases was held in Lund and Malmö, Sweden, on March 28 and 29, under the joint presidency of Prof. J. P. SANDBLOM and Prof. J. WALDENSTRÖM.

Dr. H. VETTER (Austria) described the use of radioactive colloid materials in the estimation of liver blood-flow. This is based on the assumption that these substances are removed from the circulating blood by the cells of the reticulo-endothelial system, which are mostly found in the liver. This removal is estimated by simply placing a counter between the thighs. Suitable radioactive substances are colloidal radiogold and heat-denatured human serum-albumin labelled with ^{131}I. In cirrhosis of the liver, comparison of results obtained with colloidal radiogold with those for bromsulphalein showed that two-thirds of the diminished bromsulphalein removal was due to decreased liver blood-flow and not to impaired liver-cell function. There was a significant negative correlation between the liver blood-flow and the portal venous pressure.

Galactose is metabolised solely by the liver, and Dr. N. TYGSTRUP and Dr. K. WINKLER (Denmark) had given this compound intravenously and measured its removal from the blood. Liver blood-flow was then calculated. Quite small amounts of alcohol diminished galactose removal. The mechanisms of this interference were obscure.

Dr. R. L. BLOMSTRAND (Sweden) had cannulated the thoracic duct and studied the lymph biochemically. 10–50% of the thoracic-duct flow comes from the liver. The normal flow was 40–120 ml. an hour. A patient with cirrhosis produced 500 ml. an hour. This overproduction would support the hypothesis that ascites is produced from liver lymph. Erythrocytes injected into the ascites could be recovered from thoracic-duct lymph.

Dr. C. E. EKMAN and Professor SANDBLOM reported their results for portocaval anastomosis in cirrhotic patients with portal hypertension. 11 of 69 patients died after operation. Preoperative tests showed that 9 of those dying had poor liver function and 2 good liver function. This emphasised the importance of reserving this operation for those with good hepatic reserve. 42 of 55 survived one year and only 2 had further gastrointestinal hæmorrhage.

Dr. H. KROOK (Sweden) had used the occluded (wedged) hepatic vein technique to measure the portal venous pressure. A raised pressure was diagnostic of cirrhosis. The presence of vascular spiders correlated with the height of the portal venous pressure.

Dr. D. N. S. KERR (Britain) described 4 children with portal hypertension due to congenital fibrosis of the liver, a variant of polycystic liver. Biochemical tests were virtually normal, apart from a raised serum-alkaline-phosphatase. Microscopic examination of the liver showed a normal zonal pattern, the liver lobules being surrounded by dense fibrous tissue containing bizarre bileducts and very few portal veins.

Dr. M. SCHWARTZ (Denmark) had used ^{131}I-labelled human albumin to measure the rate of serum-albumin degradation. In normal people and in such conditions as nephrosis, albumin production seemed to follow the serum-albumin level, more being produced when serum levels were low. In cirrhosis, however, the rate of metabolism was much less than expected, reflecting the diminished capacity of the diseased liver to synthesise albumin.

Dr. F. SERIN (Sweden) reported a patient with mushroom (*Amanita virosa*) poisoning. A period of hepatic failure followed the initial diarrhœa and vomiting, and this was marked by jaundice and a rise in the serum-enzymes aldolase, glutamic oxaloacetic and glutamic pyruvic transaminase, and malic and lactic dehydrogenase. These were presumably released by the damaged liver. Disturbances in blood coagulation were shown by a fall in Christmas factor and factor v; antihæmophilic globulin was unaffected, and was probably not of hepatic origin.

Professor WALDENSTRÖM commented on the group of adolescent patients, with cirrhosis, acne, and high erythrocyte-sedimentation rates, that he originally described in 1950. Jaundice might not be present, and such a patient with predominant portal hypertension had benefited by portocaval anastomosis. Dr. S. SHERLOCK (Britain) had noted that these patients often showed an excessive adolescent growth spurt. Dr. G. H. JEFFRIES (Britain) had seen steatorrhœa, which did not seem to be of pancreatic or intestinal origin, and might be due to diminished hepatic production of bile salts.

Dr. J. H. ARFWEDSON (Sweden) had studied 100 patients with pruritus in pregnancy. He had found disturbed hepatic function in 87, especially in those with severe symptoms. A slightly raised serum-bilirubin level and decreased serum-α-lipoproteins were the commonest abnormalities. Differentiation must be made between gallstones, virus hepatitis, and the obscure intrahepatic obstructive jaundice of pregnancy described by Dr. L. THORLING (Sweden).

QUANTITATIVE METHODS IN HUMAN PHARMACOLOGY

A SYMPOSIUM on Quantitative Methods in Human Pharmacology and Therapeutics, arranged by the Coordinating Committee for Symposia on Drugs and supported by the British Pharmacological Society, the Physiological Society, the Royal Society of Medicine, and the Biometric and Nutrition Societies, was held in London on March 24 and 25.

Sir CHARLES HARINGTON remarked that it had been said that the invasion of biology by mathematics had robbed it of much of its charm. But the quantitative aspects of biology were vitally important, and those who, like himself, hankered after the days when workers could be content with qualitative observations had to recognise that this feeling was a weakness to be sternly suppressed.

Quantitative studies gave new information at laboratory and clinical levels. They were vital for effective therapeutics.

Prof. J. H. GADDUM pointed out that the advance of the science of therapeutics was due not only to the provision of new drugs but also to the methods of measuring their effects—which was, for the first time, to be the theme of a symposium. Although there was no effective remedy for the common cold we had at least learnt how to prove that certain remedies were less effective than some people supposed. He hoped that nobody would stay away from the session on statistics because they might think it likely to be too difficult. He said (to the evident relief of many present) that there was no need for doctors to understand statistics but it was important for them to know what statistics could and could not do for them.

OBJECTIVE ASSESSMENT

Dr. HARRY GOLD described problems of measurement in his experience of assessing in patients the effects of xanthine derivatives and khellin on angina pectoris, and of digitalis. It was essential, when subjective judgments were being made, that not only the patient but also the doctor should be kept in ignorance of the treatment used. Doctors, he said, had little difficulty in accepting the power of suggestion as applied to their patients, but the notion that the same applied to the doctor had not had an equally cordial reception. Experimental therapeutics had come to depend on the development of accurate pharmacological techniques in man; there was no escape from it. Resistance to the idea that exact measurements were needed still existed, however; it was due to faulty thinking.

METHODS OF EVALUATION

Prof. C. A. KEELE described the measurement of analgesia in man. He declined to define " pain ", remarking that it was an experience we could all recognise easily enough. Measurement of pain indirectly by means of the observable concomitants (sweating, wincing, changes in heart-rate, &c.) had not been as satisfactory as simple subjective assessment. He proposed an index obtained by multiplying the pain-relief score by the side-effects score, calling this the " score of contentment ", which would enable the therapeutic usefulness of drugs to be compared conveniently.

Dr. PETER SAINSBURY discussed the measurement of bodily changes accompanying emotion. Measurement of muscle tone and involuntary movements was practicable with minimal disturbance of the patient, and it could be reasonably quantitative. He was able to measure the amount of gesture, fidgeting, and tie-adjusting, as well as muscle-tone, and to record the effects of drugs on these.

Dr. H. STEINBERG described the measurement of the effects of drugs on various kinds of performance—reasoning, association and memory, perception and vigilance, and motor coordination and speed. Complex intellectual performance had been little studied quantitatively, probably because of the difficulties, but interesting results were being obtained. It had been shown, for example, that drugs might reduce performance in a test by reducing incentive and not by interfering with ability to perform. During intellectual tests knowledge of results could act as a spur, and the effects of some drugs had been shown to differ according to whether or not this spur was present. Small amounts of anxiety acted, as expected, as an incentive to performance, but large amounts were incapacitating. The effects of drugs on these factors could now be measured.

Prof. L. GOLDBERG described how it is possible to measure the effects of drugs on motor activity and stability. He instanced an experiment in which Romberg's test was performed with a light attached to the subject, the movement of which was recorded on a photographic plate.

Dr. H. K. BEECHER discussed the measurement of subjective states. He suggested that pharmacologists did not play a large enough part in experimental therapeutics, remaining detached from the clinic, which was too far beneath their ivory towers for them to notice it. He thought (and the meeting obviously agreed) that the accurate measurement of subjective states was one of the most important advances in experimental therapeutics.

STATISTICAL METHODS

Dr. W. G. COCHRAN lucidly described the use of such techniques as Latin squares, randomised blocks, and sequential analysis, and their merits in assessing responses to drugs. Dr. C. C. SPICER discussed the statistical treatment of results when these could only be assessed semiquantitatively by grading into pluses and minuses by the observer. Such a method could be accurate and reproducible. Dr. D. J. FINNEY asked whether the habit of expressing doses of drug as weight per kilogramme of body-weight was entirely satisfactory in the light of new statistical and pharmacological practice. There was some discussion, but he remained unanswered.

CLINICAL TRIALS

Prof. A. BRADFORD HILL said that it was just as well that the newer statistical techniques, which were so valuable for extracting the maximum amount of information from data, had not been available ten years ago, when the scientific basis of therapeutic trials was being established, for it was doubtful whether clinicians would have tolerated them. Now, however, with the principles of clinical trials widely accepted, it was possible to introduce newer techniques, such as sequential analysis, without astonishing physicians too much.

Prof. W. A. BAIN discussed the design of small-scale drug trials and pointed out that with careful design a great deal of valuable information could often be obtained from a very few patients. Since subjects for clinical trials of new drugs might be very scarce it was vitally important to attend carefully to design if many drugs were to be tested at all.

Dr. RICHARD DOLL discussed some practical problems of the design of clinical trials—in particular the necessity for controls, including the use of dummy drugs. Randomisation was important; allotting of patients or treatments alternately had serious disadvantages.

Finally, Dr. T. F. FOX spoke on the ethics of experiments on man.

He pointed out that patients must be able to rely on a doctor doing what was best for *them*—not what he thought best for other clients, or for himself, or for his profession, or for science. On the other hand, to deserve the trust of the public, doctors must have knowledge; and their duty to advance knowledge could not be fulfilled without clinical experiment. A clear distinction must be drawn between the sick person as patient (to whom nothing must be done except to his direct advantage) and the sick person as volunteer (a legitimate object of experiment). This change of status required the person's consent. If, before entering hospital, patients had read a printed explanation mentioning the need for experimentation, perhaps they could be regarded as having given implicit consent for

minor procedures carrying virtually no risk and causing little discomfort. But, even so, the decision about these procedures should be taken by the doctor who had undertaken to look after the patient and therefore to put his interests first (called by Guttentag the "physician-friend"). When an experiment was more than trivial, the "physician-experimenter" (whose chief concern was to solve a problem) should be a different person from the physician-friend, and the consent must be explicit not implicit. It must also be valid, and, if the patient could not understand what was proposed, supplementary consent should be obtained from a medical person acting on his behalf, preferably his family doctor.

In the discussion one or two speakers regarded it as impracticable and undesirable to separate "experimenter" and "friend": the patient, they felt, was best safeguarded if the experimenter was personally and fully responsible to his patient. Dr. Fox, however, thought that the vision of investigators, when engaged in experiments, was liable to become so concentrated and limited that they could not suitably take decisions on the patient's behalf. Decisions could be very difficult, and, if an experiment was doubtfully justifiable, the experimenter could properly be questioned by his peers when he reported his work to a society. Medical journals, too, might properly ask authors to include specific assurances that the patients were true volunteers; and it was professionally healthy that clinical experiments should occasionally be challenged publicly by those who found them disturbing.

Dr. J. VAN NOORDWIJK gave an account of an official Dutch study of the ethics of human experimentation. Several workers explained their experiments, and invited Dr. Fox to comment on their ethical position—which, as an outsider, he declined to do. The questions showed that clinical workers are conscious of the perennial difficulties facing those who try to advance knowledge by working on man.

The proceedings of the symposium are to be published by the Pergamon Press, London.

Special Articles

MORAL RESPONSIBILITY IN CLINICAL RESEARCH

Mr. D. MACG. JACKSON, surgeon to the Birmingham Accident Hospital, spoke on this subject at a London meeting of the Christian Medical Fellowship on March 26.

Research, he said, is a new departure in medicine, with the future in mind: there is no reference to it in the Hippocratic Oath. It may take the form of "observation" or "planned experiment", or both; but experiment is a sharper tool—it has been compared to cross-examining Nature rather than merely overhearing her. Though experimental clinical research will probably always remain the call of a few, these should have the fullest understanding and willing cooperation of their clinical colleagues, because research is a moral responsibility of all doctors. As McCance has remarked, without continued research our knowledge would fall away as it did in the Middle Ages and be forgotten. For those who have qualms about the value and propriety of clinical research, the answer to inhuman research is humane research—not no research at all.

The greatest interest in the morality of clinical research is shown by the public, who realise the importance of interpersonal relationships with doctors. In practising clinical research there is an obvious conflict of loyalties which is not shared in purely medical work. The physician's care is focused first, last, and all the time on his patients; but the good investigator must be very much interested in his problem. There are many other loyalties, however, common to both these men, which conflict with that to their patients—responsibilities for teaching, for their families, for their livelihood, their own health and recreation, and perhaps for Christian, social, or political work. The investigator has just one more loyalty to which he must give correct priority—loyalty to his particular search for the truth.

F. H. K. Green has pointed out that "when the value of a treatment, new or old, is doubtful, there may be a higher moral obligation to test it critically than to continue to prescribe it year-in-year-out with the support merely of custom or of wishful thinking. In this sort of test there are few limiting moral considerations, for it is indicated only when both of two (or more) treatments are unevaluated. Moreover, frequently there will be no indication to get the patient's permission for inclusion in such a trial. Again, various clinical "experiments"—such as taking a few extra millilitres of blood at the time of a diagnostic or therapeutic venepuncture—are not uncommonly done without obtaining permission. This is done and accepted in the spirit of good faith embodied in the doctor-patient relationship. But if the experiment is more elaborate, involving any degree of extra discomfort, risk, or cooperation, most investigators would agree that the whole procedure should be explained to the patient or parent honestly and fully, and their permission obtained. At the same time, explanation is often difficult, and because of the patient's trust in the doctor he may agree to almost anything. Hence consent, though it should be obtained, is not enough. The responsibility for an experiment rests squarely on the investigator and each member of his team at all times, and if there is any doubt the value and propriety of the trial should be considered by informed and independent opinions.

Remarking that the real difficulty lies in the application of our principles, Mr. Jackson devoted the closing part of his address to "a much more neglected aspect of this subject"—namely, the source of the accepted moral responsibilities of clinicians.

The underlying concepts are, first, a belief in the sanctity of human life, and secondly a belief that the claims of the individual come before those of the society in which he lives. What is the source of these concepts? Are we still prepared to accept them, and if so, why?

The Greek world showed neither compassion nor organised care for the weak, the disabled or the hopeless case. In India, Hinduism is fundamentally a philosophy of denial of this world and life, and till recently there was no active expression of love and compassion to those in need. The earliest Buddhist hospitals in India preceded by some 400 years the first Christian hospitals, for Buddha advocated merciful action to those suffering. But, though kindness is at the centre of Buddhism, a sick man is not of value as a personality: kindness is for the benefit of the doer rather than the sufferer, and a man's first and chief occupation is with his own redemption. In China the height of medical development was reached about the same time as that in India; but under the influence of Confucius subjection to authority produced a fatal inertia which turned tradition into a prison.

The Christian view of man is in contrast to these, and is based on the two teachings of the *Old Testament* that man is a creature created by God, and that man is made in the image of God. Linked with these two ideas is the appreciation of man as an individual: each individual is unique. In contrast to the indifferent and fatalistic view of suffering reflected in Greek and Roman and in Eastern religions, Christ gave us a new estimate of the value of human life and personality. In no other religion are these basic values found, though the fruits of them are coveted and copied.

Many would accept our medical ethics as self-evidently good, while divorcing them from their foundation principles. But this is a dangerous and superficial attitude. If we feel that our present clinical ethical code is the best, it is short-sighted, if not madness, to regard it as self-evident. It is not so regarded by believers in Marxist ideology which is extending its influence now over one-third of the population of the world. Marxian Communism denies the existence of God and the

sanctity of human life: man comes from the earth and will return to it as though he had never been, and he has no rights beyond these which the State confers on him. It is at least logical that if man exists for the State, the State has the right to do whatever is expedient with him. It is not illogical for Lenin to write "Three-quarters of mankind must die if necessary, to ensure the other quarter for Communism". Such an ethic has foundations in basic beliefs about the nature of man—however untrue those beliefs may be.

What a difference from humanism! The contrast lies in humanism's high estimate of man. Its aim is to gain the greatest development for every human being, and this by education, not by force. Much of the noblest effort and achievement, such as liberal education and modern democracy, has sprung from this exalted view. And yet these two, Communism and humanism, are alike in one major aspect: they both deny the supernatural and God. In denying God, humanism builds its ethics on sand. "Ought" and "ought not" are words that have real content and meaning only for those who recognise an Authority who can make absolute demands on them. The "ought" of humanism is the consensus of humanitarian opinion, the sanction of expediency and public taste. We are not ignorant of the force of propaganda and indoctrination to change these standards—and to rationalise the change. In this lies the danger of accepting our clinical ethics from the borrowed capital of humanism.

If one doubts the possibility of our ethics being changed by circumstances, and those changes being accepted by medical and other humanitarian people, one has only to consider Germany in our own time. This sad example shows how our accepted standards can be lost if we hold them loosely and without adequate reason. As T. S. Eliot has said, "If you remove from the word 'human' all that belief in the supernatural has given to man, you can view him finally as no more than an extremely clever, adaptable and mischievous little animal." In spite of humanism's high estimate of man, the inhumanity of man to man has never been more obvious than it is to this generation.

The shallowness of some contemporary writing on medical ethics, said Mr. Jackson, is the failure to follow through to basic concepts of the nature of God and man. Our accepted ethics of clinical research are of Christian origin, being based on the nature of man and the value of his life in God's sight. The extent and growth of totalitarian ideologies make it clear that we cannot assume that our present standards are either self-evident or unlikely to be assailed. There is no safety in standing on "the uncertain sands of past traditions, or that ever-changing contemporary belief—the consensus of humanitarian opinion".

SENIOR REGISTRARS

Correspondence between Minister of Health and Chairman of Joint Consultants Committee

THE Joint Consultants Committee and representatives of the Ministry of Health have been jointly considering the future of the time-expired senior registrars. The Joint Committee found themselves unable to agree to proposals put forward by the Ministry, and asked to see the Minister of Health. The planning subcommittee of the Joint Committee, led by Sir Russell Brain, met the Minister on March 25. In the course of a full discussion the Minister said, among other things, that present economic conditions obviously made it difficult to contemplate any substantial increase in the consultant establishment. The Joint Committee, later the same day, considered the result of this meeting and asked Sir Russell Brain to see the Minister again for further discussions. Sir Russell met the Minister on April 1, and the Minister promised to comment in writing on the views of the Joint Committee. Subsequently the following letters were exchanged:

9th April, 1958.

Dear Sir Russell,

When we had our talk about senior registrars on the 1st April I said I would write to you on the points you raised and let you know the lines of the statement I am proposing to make to Parliament after the Recess.

You told me that the Joint Committee were not happy about the creation of a new grade which would consist of people some of whom might not become consultants. From this it appears that I cannot have made my proposals quite clear. I know the Committee's views about the creation of a new grade, and though I do not share them, my proposals are deliberately drawn to deal with the immediate problem of the time-expired senior registrars in a reasonable way without raising the contentious issue of a new grade.

The whole plan of the draft circular put to the Committee last year was to make reasonable provision for these time-expired men in senior registrar posts, not in posts of some new grade. The fact that the extended salary scale envisaged by the draft circular would be attached to a limited number of senior registrar posts, not to all, does not conflict with that concept. At the same time the plan avoids the difficulty presented by the suggestion that has been made that all senior registrars who do not obtain a higher appointment within their normal term of training or within a defined period of its completion should automatically become entitled to a higher salary. As I explained in the course of our conversation, an arrangement of this kind would be a simple inflationary salary increase and not consonant with the Government's policy. Moreover, it would be wrong to change the salary scale for senior registrar posts generally while the Royal Commission is in the midst of its enquiry into remuneration.

Similar considerations stand in the way of arranging that all senior registrars who fail to secure a consultant post within a reasonable time would be put in the senior hospital medical officer grade. If, however, the proposition were that the designated posts envisaged by the draft circular should be in the senior hospital medical officer grade instead of in the senior registrar grade the same difficulties would not apply—though, as you said, there might well be others. Before I could say whether such a proposition would be acceptable I should need to be given fairly full details, including information of the modifications which would be proposed to the agreement of 1950 on senior hospital medical officer posts. For the time being, therefore, I think we should keep to the idea of making suitable provision in senior registrar posts.

The suggestion that senior registrars who were doing consultant work might forthwith be given consultant status but not the pay of consultants, and be assured that they would be given a consultant appointment when economic and other circumstances allowed, does not seem to me to offer an acceptable solution to the difficulty and I should have expected that this applied from the Joint Committee's angle just as much as from mine. We do not want the posts occupied by these time-expired senior registrars to be regarded as a substitute for additional consultant posts. This is stressed in the draft circular. What we have in mind, as I have said, is that they would still occupy posts which entail work proper to the senior registrar grade, and designated posts involving work commensurate with that which is normally expected of a fourth year senior registrar would carry the extended salary scale. The holders would be able to continue to compete for consultant vacancies and no doubt they would do so. This is now the established method of obtaining consultant status, and I am sure that it is the method that serves the best interests of the hospital service—which must be the paramount consideration—and must be maintained intact for that reason

and also in fairness to other potential competitors for consultant posts.

The terms and conditions of service do not exclude the possibility of a hospital doctor holding a part-time consultant appointment and a part-time senior registrar appointment at the same time and indeed instances exist, though they are few, of doctors holding part-time appointments in the senior registrar grade and in another grade at the same time. Any extension of arrangements of this kind would depend on Boards splitting sessions which they would otherwise group for one consultant appointment and assumes that geographical considerations are no impediment. This would make for administrative complication and would increase expense. For these reasons I do not think that it would be appropriate positively to encourage the growth of this kind of arrangement, certainly not in advance of the Working Party's report.

My general approach to the problem of the time-expired senior registrars is that we should set up a Working Party to study, in the light of experience of the hospital service since 1948, and of all other relevant considerations, the principles on which the medical staffing structure in the hospital service should be organised; and that pending the Working Party's report we should make reasonable provision for the time-expired men. I am not seeking to bring about some permanent change in the staffing structure by these interim arrangements. I fully accept that the arrangements should be regarded by both sides as of an interim nature pending decisions on the Working Party's recommendations; and I hope that with this explicit assurance the Joint Committee may feel able to accept in principle the suggestions set out in the draft circular for dealing with the immediate problem. The way will then be clear for the details of the circular to be settled, and for the Working Party to be got under way.

As you know I am committed to making a statement to Parliament immediately after the Recess. The enclosed note shows what I have in mind. Settlement of its final terms must await the outcome of your meeting on the 16th. No doubt I shall be hearing from you as soon as the meeting is over? I think the Members who are taking a special interest in this will be counting on my making a statement on the 21st.

Yours sincerely,

DEREK WALKER-SMITH.

16th April, 1958.

Dear Minister,

The Joint Consultants Committee has considered the discussion which some of its members had with you on March 25th and your letter to me dated 9th April, 1958. The Committee welcomes your proposal of a joint working party with the Ministry to study, in the light of experience of the hospital service since 1948 and of all other relevant considerations, the principles on which the medical staffing structure in the hospital service should be organised. A recent answer which you gave to a question in the House of Commons shows what a wide discrepancy there is in the consultant establishments in certain specialties between different regions. It seems to us therefore necessary to enquire how this has come about and whether the needs of the service for consultants are being fulfilled. Such an enquiry by the proposed Working Party would call for a survey for this purpose. We have long thought that the work done by S.H.M.O.s is in need of review and the Working Party should, and we understand would, include in its scope the consideration of the work of S.H.M.O.s, including the points which Whitley Committee B recently decided to investigate.

With regard to the time-expired senior registrars we believe on a number of grounds that the only satisfactory solution of this urgent problem is that these doctors, who have long completed their training for consultant posts, should obtain such posts, but the establishment of new consultant posts must of course be related to the needs of the service, which the Working Party is to consider. It seems to us more logical and practical to await the recommendations of the Working Party, which we hope will be available within a year, than at once to create new senior registrar posts which, carrying the implication that they may be permanent, are likely to prove equally unattractive to senior registrars and to hospital management committees. If there should ultimately be some of the present time-expired senior registrars who do not in the end obtain consultant posts we accept the principle that such people should, if they wish, be given permanent security in the Health Service. This principle being accepted, we think that the kind of work they should do needs most careful consideration by the Working Party and should not be the subject of an immediate decision, the full implications of which cannot now be foreseen. For this reason we are unable to accept the principles set out in the draft circular, but if you decide nevertheless to proceed with your proposals to create these new posts we think that their terms and conditions should be discussed with us either in the Working Party or by direct consultation between the Ministry and the Joint Committee. We understand that the Working Party will be free subsequently to make what recommendations it thinks fit with regard to their future, subject to the provision of the same security of tenure for the holders. We regard it as an important part of its subsequent task to see that this situation does not recur.

As our discussions with you cover more points than are dealt with in this correspondence we assume that an agreed statement covering our discussions will be published together with these letters.

Yours sincerely,

W. RUSSELL BRAIN

18th April, 1958.

Dear Sir Russell,

Thank you for your letter of 16th April. I was glad to note that the Joint Consultants Committee welcome my proposal of the joint working party with the Ministry to study, in the light of the experience of the hospital service since 1948 and of all other relevant considerations, the principles on which the medical staffing structure in the hospital service should be organised. The working party would of course cover the whole staffing structure and in the case of Senior Hospital Medical Officers I see no objection to its dealing with the points which Committee " B " of the Medical Whitley Council have recently decided to investigate, always providing that there is no objection from Committee " B " itself. Of course I do not envisage that the working party will deal with pay.

I can understand that holding the views they do the Committee would prefer to leave over the problem of special posts for time-expired senior registrars until the working party has completed its report. But, as I have said, my proposal is purely an interim one and although we all hope that the working party will be able to complete their task within a year, the problems are complicated and I am sure that neither of us would want consideration of the very difficult questions that will arise to be hindered by pressure to produce a speedy report because of the immediate problems of individual time-expired senior registrars. Nor do I think that these individuals should have to wait on the working party for some further assistance with their present position.

I enclose a draft of the statement I propose to make in reply to a question which has been put down for answer on the 21st. I hope you will not find that this will raise difficulty on your side.

Subject to the last paragraph of the statement, I shall be very glad for the terms and conditions of the new posts to be further discussed between the Ministry and the Joint Committee, but for the above reasons we really must come to a speedy decision.

I shall of course see no objection to this correspondence being published if you wish.

Yours sincerely,

DEREK WALKER-SMITH.

*** The statement by the Minister in the House of Commons on April 21 is reproduced on p. 906.—ED.L.

Public Health

THE HEIGHTS AND WEIGHTS OF EDUCATIONALLY SUBNORMAL CHILDREN

A. PARRY JONES
M.B. Wales, D.P.H.
DEPUTY MEDICAL OFFICER OF HEALTH, CHELTENHAM, GLOS.
W. MURRAY
HEADMASTER, THIRLESTAINE COURT E.S.N. SCHOOL, CHELTENHAM

THE 1944 Education Act has helped to revolutionise the approach to the education of the handicapped child. The main type of handicap is mental backwardness; and, since 1945, 153 special schools for educationally subnormal (E.S.N.) children have been opened in England and Wales,[1] more being planned for the immediate future.

Admission to these schools is generally on the grounds of mental backwardness—i.e., poor scholastic attainment combined with a low intelligence quotient (50–75). But we noticed that often the children were also backward *physically*, though there was seldom any disease to account for their physical retardation. This apparent difference was such that we decided on a detailed investigation, and accordingly we measured the heights, weights, and intelligence quotients of the children attending two junior E.S.N. day schools in neighbouring towns.

In presenting our findings we have used the height and weight indices of Sutcliffe and Canham.[2] These indices numerically resemble intelligence quotients (the normal being 100), and we have used them so that our measurements can be readily compared with those of normal children.

Sutcliffe and Canham compiled their figures from the heights and weights of seventeen thousand boys and girls in various parts of England, including our own. These tables have a possible disadvantage in that they were compiled in 1948, and we wondered whether they might be out of date. So we took the average heights and weights of the children seen at school medical inspections during the last year and converted them into Sutcliffe and Canham indices. The readings

TABLE I—HEIGHTS OF E.S.N. CHILDREN (BOYS AND GIRLS COMBINED)

Age (yr.)	Height index								Total
	Below 70	70	80	90	100	110	120	130 or more	
7	—	—	1	1	—	—	—	—	2
8	1	2	5	1	1	3	1	—	14
9	1	3	6	7	5	1	—	—	23
10	2	4	3	7	5	3	1	—	25
11	3	3	8	5	2	1	1	1	24
12	3	1	5	9	9	1	—	—	28
13	1	1	3	—	3	1	1	—	10
Total	11	14	31	30	25	10	4	1	126

varied from the normal of 100 up to 103. Hence we regard these indices as satisfactory for the purposes of this investigation.

Tables I and II show that 73% of the children attending these E.S.N. schools had weight indices below the normal of 100, and that 68% were also below the average in height. Whereas with normal children the majority of heights and weights fall within 90–110 on this index scale, with these E.S.N. children the majority fell within 80–100 both in height and weight. Among the remainder, more children were at the lower end of the scale than at the higher. Thus we are in no doubt that there is a considerable difference in physique between normal children and those in our two E.S.N. schools.

We did not detect any significant difference between the measurements of the boys and those of the girls. The degree of underdevelopment was spread evenly between all age-groups except the youngest, in which the number of children examined was small.

We do not claim that these observations are original. More than twenty years ago Burt found that the dull and

TABLE II—WEIGHTS OF E.S.N. CHILDREN (BOYS AND GIRLS COMBINED)

Age (yr.)	Weight index								Total
	Below 70	70	80	90	100	110	120	130 or more	
7	—	—	—	1	1	—	—	—	2
8	1	1	4	2	—	4	—	2	14
9	—	2	5	9	4	1	2	—	23
10	3	3	7	5	4	3	—	—	25
11	2	2	9	7	1	—	1	2	24
12	2	3	5	9	6	1	1	1	28
13	2	3	4	1	—	—	—	—	10
Total	10	14	34	34	16	9	4	5	126

the intrinsically backward suffered primarily from retarded (physical) development.[3] In 1941 Boas [4] wrote of American children:

"A study of the data collected shows an unexpectedly high relation between intelligence quotients and stature. Children short for their age had an I.Q. markedly under the norm, those tall for their age, one above the norm."

Recently the standard of living in this country has risen; but in our E.S.N. schools the findings are much the same as those of Burt twenty years earlier. This might suggest that the relation between physical and mental retardation is independent of environment; but we think that the more likely explanation is that these recent social improvements are not in fact reaching all children. Certainly many of the E.S.N. children under our care have not benefited as fully as might be expected. In some homes laziness and thoughtless spending of money may lead to an unnecessary lowering of standards which adversely affects the children.

We do not wish to imply that a poor home environment is necessarily a major cause of the poor physique of E.S.N. children. This is a problem that has not yet been disentangled. Burt [3] wonders how far this physical and mental difference between the bright and the dull "is due to the direct effect of a healthy life and diet upon the manifestations of intelligence, as judged by the ordinary tests, how far it is due to the fact that the more intelligent families are both able and willing to give better attention to hygienic conditions, and how far it is an outcome of a fundamental impulse to grow more rapidly in all directions".

An answer might be forthcoming if direct additional feeding could be provided for these underdeveloped children. With the expansion of the special-school programme as a result of the 1944 Education Act, more and more E.S.N. children are being segregated. The experiment of direct additional feeding would now be administratively easier, and the effects, if any, could be more readily measured. In our opinion the provision of extra food and milk in E.S.N. schools would be well worth trying, and the results might be rewarding.

The views expressed here are our own and are not necessarily those of the Cheltenham Committee for Education.

1. Ministry of Education pamphlet no. 30, p. 3. H.M. Stationery Office, 1956.
2. Sutcliffe, A., Canham, J. W. The Heights and Weights of Boys and Girls. London, 1950.
3. Burt, C. The Backward Child. London, 1946.
4. Boas, F. *Science*, 1941, **93**, 339.

Poliomyelitis Vaccine

In written replies on Monday to questions about the supply of poliomyelitis vaccine, the Minister of Health said that about 6½ million doses of vaccine were needed for the programme of vaccinating pregnant women and children under 15; towards this, 2 million doses were in the hands of local authorities by the end of February. Orders had been placed with two British firms and (for 5000 litres of Salk vaccine) with one United States and one Canadian firm. For different reasons there was a hold-up in supply in each of the four sources. When the first difficulties arose in the supply of British vaccine, a further 2800 litres of Salk vaccine had been ordered, as well as further supplies when the Salk vaccine due last week did not appear. Some British vaccine was now being distributed, and, barring further unforeseen difficulties, much larger supplies (mainly of Salk vaccine) would be ready next month. Further supplies of Salk vaccine were being ordered. The Indian Government had imposed certain restrictions on the export of monkeys, but these had not so far interfered with the manufacture or testing of vaccine in this country.

A batch of vaccine (250,000 doses) from the Wellcome Foundation was held up by sickness of the test monkeys; this batch has now been passed and distribution has begun. According to press reports, the Canadian source, Connaught Laboratories, believe that there has been a " misunderstanding in London ": the contract was for 4 million doses before the end of June, and half of this had been supplied; the director knew that the British authorities wanted extra supplies in March, but the domestic demand had been exceptionally heavy just then. The United States source, the Pitman-Moore Company of Indianapolis, said that 1,300,000 doses destined for Britain were held up because 1 virus out of 50,000,000 in a testing sample was found to be alive.

A batch has arrived in London for testing of the consignment of 1,500,000 doses ordered as an emergency from the Parke Davis Company of Detroit. A large proportion of this is said to be in stock and to have passed the tests of the company and the United States authorities. The British tests normally take about 2½ months.

Case of Smallpox in the Wirral

A boy, aged 2 years, who lives about 400 yards from New Ferry Smallpox Hospital (where a seaman is lying ill with smallpox [1]), and who had not been vaccinated, fell ill on April 6. A rash appeared on April 9 and by April 14 was profuse all over the trunk, arms, and legs, and confluent on the face; the palms and soles were affected. Asian smallpox was confirmed. Since an attack of mumps he had not been out till about March 22, and then in a wheel chair. There were few contacts outside the home. All contacts have been vaccinated and are under surveillance; his relations living at home are remaining indoors, and their shopping is being done by a health visitor. The child was admitted to New Ferry Hospital, and on April 20 was reported to be much better.

New Recommendations in Industrial Diseases

The Industrial Diseases Advisory Council was asked to review all the diseases prescribed under the Industrial Injuries Acts (except pneumoconiosis and byssinosis), and its subcommittee has now issued a report,[2] with recommendations, which have been accepted by the Minister of Pensions and National Insurance.

The Council suggest an inquiry into elbow conditions in trades involving manual labour. They recommend that the description of poisonings by certain substances (e.g., lead, benzene) should be extended to certain of their compounds, and that there should be changes in the definitions of industrial dermatitis and radiation injuries. Slight changes were recommended in the wording concerning the cover provided for tuberculosis.

1. See *Lancet*, March 29, 1958, p. 686.
2. Ministry of Pensions and National Insurance: Review of the Prescribed Diseases Schedule. Cmnd. 416. Obtainable from H.M. Stationery Office. 1s. 9d.

Parliament

Opticians Bill

AT the report stage of this Bill [1] an amendment was accepted adding a fourth ophthalmic specialist to the General Optical Council, thus raising the number of medical representatives from 5 to 6.

In moving the third reading of the Bill Mr. RICHARD THOMPSON, parliamentary secretary to the Ministry of Health, said that it left the House in better shape than when it was introduced. The promoters had accepted modifications to meet the views of the House. The Bill now provided that the register of ophthalmic opticians should be in two parts, those proposing to test sight only and those proposing to test sight and to dispense glasses. Amendments had also been accepted which prohibited the testing of sight except by a registered medical practitioner or a registered ophthalmic optician, and the sale of optical appliances except by or under the supervision of a doctor or optician. An amendment had been added defining the scope of the optician's work in relation to the work of the medical practitioner. Mr. Thompson was glad that it had been found possible to introduce wording into the Bill which defined these responsibilities satisfactorily. It was important that the optician should not overstep the boundary between his functions and those of the doctor. He looked forward to a constructive partnership between opticians and doctors in the future as a result of the Bill and of the setting up of the General Optical Council.

QUESTION TIME

Senior Registrars

Mr. KENNETH ROBINSON asked the Minister of Health if he would now make his promised statement on the senior registrar problem.—Mr. DEREK WALKER-SMITH replied: The Joint Consultants Committee and I have agreed to set up a joint working party to study, in the light of experience of the hospital service since 1948 and of all other relevant considerations, the principles on which the medical staffing structure in the hospital service should be organised.

I have concluded that—pending and without prejudice to the working party's report—the current arrangements for senior registrar posts should be modified in certain respects, in view of the fact that some senior registrars have long completed the normal tenure of their posts but have not yet succeeded in obtaining a higher post. I am satisfied that these senior registrars should be given an opportunity of remaining in the hospital service whilst they continue to compete for higher posts, and hospital boards are being asked where necessary to offer extended contracts pending the working party's report.

Also without prejudice to the working party's report, I am asking hospital boards to submit proposals for designating a limited number of senior registrar posts—mainly from among those already existing—which will provide responsible work commensurate with that which is normally expected of a fourth year senior registrar; will carry a higher rate of pay; will offer security of tenure; and will be available to senior registrars who have completed the normal period of appointment in the grade. The senior registrars selected for these posts will of course be free to continue to compete for higher appointments. I will emphasise to boards that these senior registrar posts are not to be regarded as a substitute for additional consultant posts.

The Secretary of State for Scotland is discussing with the Scottish Joint Consultants Committee the application of these arrangements to Scotland.

Mr. ROBINSON: Is the Minister aware that the interim arrangements which he has announced may be a satisfactory solution to the short-term problem, but that the only tolerable solution to the long-term problem is a considerable expansion of consultant posts? Why is it necessary to set up a working

1. See *Lancet*, 1957, ii, 1166 & 1234.

party to come to that very obvious conclusion? Mr. WALKER-SMITH: We have to look at the number of consultant posts which are desirable in the light of the staffing structure, and also of the economic context. I hope that we shall get a quick and valuable report from this working party, and I prefer to wait for that.

Sir KEITH JOSEPH: Will the Minister note that it is not commonly accepted that the only long-term solution is an expansion of the consultant force, since the economics of the service to the public and the location of the consultants in relation to the public demand that those factors must be examined most carefully? Mr. WALKER-SMITH: I will certainly bear in mind those valuable and constructive suggestions.

Dr. EDITH SUMMERSKILL: All that the Minister has said today is that the matter is to be postponed once more, and that the anxiety of these senior registrars is to continue for an indefinite period. Is he aware that these men are being offered excellent opportunities in the United States of America, and that if there is to be another postponement we shall lose some of the best doctors in the country?—Mr. WALKER-SMITH: From the right hon. Lady's purported précis of my answer, I am afraid that either she did not hear or did not understand what I said. If she will be good enough to read it, she will find that there is a great deal more for the senior registrars than she has said.

Merit Awards Committee

Mr. ROBINSON asked the Minister what was the size of the committee on merit awards to consultants of which Lord Moran was the chairman; and how many of its members were psychiatrists.—Mr. WALKER-SMITH replied: 14, besides the chairman and the lay vice-chairman. None is a psychiatrist. Mr. ROBINSON: Without necessarily drawing the conclusion that the abysmally low number of merit awards to psychiatrists is connected with their non-representation on the committee, does not the Minister agree that this important specialty should be represented on the committee? If the Royal College of Physicians is unwilling to nominate a psychiatrist, will the Minister instruct the committee to seek nominations from the Royal Medico-Psychological Association?—Mr. WALKER-SMITH: In this matter I follow the recommendations of the Spens report, that the members of the awards committee should be appointed from nominations made by the Royal Colleges, the Scottish Royal Corporations, the Medical Research Council, and the universities. The nominations of those bodies are in personal capacities and not representative of specialties.

Russian Vaccine for Multiple Sclerosis

Mr. SOMERVILLE HASTINGS asked the Minister if he had any further statement to make regarding the Russian vaccine for multiple sclerosis, notably its toxicity.—Mr. WALKER-SMITH: Not yet, but inquiries are being pursued. Mr. HASTINGS: Is the Minister aware that a certain amount of recent research has been carried out in Belfast, which associates this vaccine with rabies and that this has given rise to a very great deal of anxiety in the minds of the public?—Mr. WALKER-SMITH: It has recently been established that the vaccine is made from the brains of rats or mice infected with the rabies virus. No further evidence is available as to the safety of the vaccine in treatment, but research is going on.

Dr. SUMMERSKILL: As a question of this kind was put to the Minister very many weeks ago and he assured us then that he was looking into the matter, why has it taken him such a long time? He must recognise that during this time many patients suffering from disseminated sclerosis have been waiting hopefully for some statement from him.—Mr. WALKER-SMITH: I have not been inactive in that matter. I was asked to look into the New Zealand question, which I have done. No evidence of the efficacy of the vaccine is available from there. I am seeking information from the Russians through the appropriate channels. Therefore, my position is at present that I can agree to the release of small private imports of this vaccine, but the patients' doctors in those cases have to agree to accept responsibility for the treatment.

Regional Distribution of Consultants

The numbers of consultants and other medical staff (including whole-time, part-time, and honorary staff) in hospitals under the regional hospital boards at the end of 1956 were given in whole-time equivalents in a written answer on April 15 and are shown in the second and third columns of the following table. The estimated number of staffed beds and population in each region, given in the fourth and fifth columns, are taken from an earlier answer.[1]

Regional hospital board	Consultants	Other medical staff *	Number of staffed beds (excluding beds allocated to mental illness and mental deficiency)	Estimated population (in thousands)
Newcastle	332	352	15,338	2944
Leeds	232	334	17,753	3066
Sheffield	285	456	19,716	4230
East Anglian	121	136	7254	1485
N.W. Metropolitan	420	641	17,930	3942
N.E. Metropolitan	317	502	18,966	3103
S.E. Metropolitan	355	439	19,933	3229
S.W. Metropolitan	505	770	25,216	4707
Oxford	134	178	7433	1503
South Western	259	330	16,621	2792
Welsh	234	365	15,494	2608
Birmingham	400	421	23,047	4547
Manchester	323	593	23,611	4381
Liverpool	196	353	14,180	2130

* Excluding house-officers and general practitioners.

Medicine and the Law

Doctor Charged with Manslaughter

AT an inquest at Bridgend, Glamorgan, a coroner's jury returned a verdict of manslaughter on the ground of reckless negligence by a doctor.[2]

In evidence, the doctor said that a woman of 39 consulted him on Dec. 2, " six days before she had a miscarriage ", but that he saw her next day (Dec. 3) and " then discovered that she had had something done to her." The doctor thought that she was on the verge of pneumonia, and not that she had septicæmia. She was under his sole care from Dec. 8 to Dec. 23; he called in no other doctor. She died in hospital from septicæmia. At the first consultation she had asked the doctor to end her pregnancy, and he had refused.

After the inquest the doctor was formally charged and granted bail.

Death of a Boxer

A VERDICT of death by misadventure was recorded, at a Manchester inquest on April 17, on a boxer who died after lying in semicoma for 321 days following a contest.

The boxer, aged 23, was said to have collapsed in the dressing-room soon after the bout, in the last round of which he was sent down with two blows to the chin. He had been warned that, because of a head injury sustained in a contest in the Army, he should never box again; but he went on with his boxing career.

Two operations had been attempted on the man's brain. At necropsy, there was no fracture of the skull, and the surface of the brain showed no evidence of laceration. The meninges were thickened and stained yellow, indicating previous hæmorrhage; there was no trace of a blood-clot. Death had been due to bronchopneumonia following internal hydrocephalus caused by traumatic subdural and subarachnoid hæmorrhages. A pathologist said that the condition could have been caused by a blow on the jaw; this was comparatively rare, but " quite a number " of cases had been reported.

1. See *Lancet*, April 5, 1958, p. 748.
2. *Times*, April 19; *Manchester Guardian*, April 19.

In England Now

A Running Commentary by Peripatetic Correspondents

"AND there," said the Salesman, turning a handle round and round, "after one minute you have all the vegetables cleaned and peeled and ready for cooking. No messy peelings to deal with, every scrap goes down the sink, and what's more, for storage you just slap it against any wall and the suction feet keep it there." Suitably impressed, we returned home a few bob lighter, clutching our shining new 'Veg-O-Lux'. I suppose the fault was really in us and ours rather than in the machine. When the Architect, in powdered wig and knee-breeches, supervised the erection of our house he didn't bargain for a veg-o-lux.

The Salesman couldn't understand why the sink had got blocked up, but he sold us a handy little chap called the 'Basin-Unstoppa' guaranteed to recanalise the most recalcitrant thrombosis. Much encouraged, we returned to the leguminous battle and all went well until the time came for disposal: we slapped it gaily on the kitchen wall and the sucker feet brought four tiles straight off. This time the Salesman got rid of a tin of 'Tile-U-Up'. When the thing brought down a shelf, he sold us some 'Neva-Slip' brackets.

The whole episode to me had a familiar pharmaceutical ring. Drugs tend to procreate themselves in just the same way. Get a good new tablet and before the end of the year there are four or five others in use to counter its side-effects. Either that, or it procreates a long line of modifications, side-chain derivatives, analogues, and so on. Then the bubble bursts and you are back to square one. It happened with liver extracts and it's happening now with tranquillisers (and not before time). All Life moves in cycles if not indeed in circles, though perhaps we like to think ourselves a little further on each time: I suppose we usually are. It remains to be seen whether this vegetabular circle has helped much: after all, it seems that vacuum cleaners are being superseded by the revolutionary new carpet sweepers that require no electricity and do not harm the pile; my wife, too, finds more and more clothes that she prefers to wash by hand instead of subjecting them to the eviscerations of the washing machine. At this rate by 1960 we shall be cooking our meals over an open fire in the back garden: yes—and may be that's not so funny.

* * *

Since the publication of the paper by Douthwaite on Pitfalls in Medicine,[1] I have been considering writing a companion paper on Medicine in Pitfalls.

The telephone rings at 4.30 A.M. "Would I come at once—three men buried." I pull on my old gardening clothes and set off for the pit. The Manager is waiting and tells me that one man got clear and two are buried. I put on pit boots and helmet and we set off for the shaft through the crowd of men at the shift change. The van from the mines rescue station with emergency surgical equipment arrives, the driver tooting rather importantly as he drives through the crowd. We get our lamps, arrange for a haulage lad to carry the equipment, and then drop down half a mile. Underground, an official meets us with the latest news. One man is almost clear, they have located the other and he seems to be alive. We set off for the coal-face and quite near it meet the stretcher party with the first man. He appears to be in reasonable shape with a possible fractured ankle. I ask the first-aid man to treat it as a fracture and send him out. We dump our main equipment and start to crawl down the face with a small emergency bag. The face height is about 3 ft. 6 in., but the effective height is reduced because it has been prepared for "filling" and is obstructed by much newly blown down coal.

The fall begins about 30 yd. along the face. The Manager leads, and when we get near he says: "There seems to be some groaning and moaning, have a look at him." I find myself in a space about 3 ft. wide with a nasty dark void above and the fall in front. The man is trapped now only up to his knees and two men are digging away cautiously to free him. There is no room for anyone else. By the time I have given some morphine he is free. We drag him under a good roof and find that although tired and weak he seems to have no gross injuries. A stretcher is pushed up and the waiting helpers carry him along the face. This is an awkward task because of the restricted height and rough floor. His main complaint is that the pieces of string he used to keep up his socks are cutting into his swollen legs. This is easily put right and he is covered up ready for the journey to the pit bottom.

At this stage a grinning toothless veteran speaks to him: "How are ye, Jim?" he says. "They didn't make all this b—— fuss when I were buried."

* * *

My score for doctors on the Aldermaston march was higher than that recorded by my peripatetic colleague last week. I counted eight—a physician, a surgeon, a pædiatrician, a virologist, a Colonial medical officer, and three G.Ps. The last group included me, the only one to go all the way—in my car which was bespattered with red crosses. My patients (what a pity I don't practise in London, Middlesex, Bucks, and Berks, they could all have been temporaries) were many—some with exhaustion, a couple of faintings, a dozen sprained ankles, two chickenpoxes, and over three hundred pairs of blistered feet.

* * * *

Nowadays one rarely has the opportunity to describe a new clinical syndrome, and only my inherent modesty prevents me from calling mine by my own name. (Also the fact that I am reserving my name for my Nobel prize-winning effort.) Alternatively I could name the syndrome after the first person to manifest the new disease. But one of the patients was born in Poland and his name is unpronouncable; and to call it Addison's disease after my second patient would only lead to confusion. So rather reluctantly I have been forced to adopt the old dermatological device of using a descriptive name; and the name I have finally selected is "Subacute phenindione pigmentary palmosis". There are two varieties: var. sinistra, and var. dextra, the latter being the more common form.

Curiously enough, though phenindione (var. 'Dindevan') has been in clinical use for some years I have only lately seen my first 2 cases of S.P.P.P. Both patients complained of a patchy orange yellow discoloration of the right palm. It did not itch nor was it found anywhere else. Both patients had tried to wash it off without success and both were much perturbed by the phenomenon. One had even travelled five miles to hospital especially to consult me about it. They were both familiar with the orange-yellow pigmentation which is seen in (alkaline) urine and which could be confused with the colour produced by blood. But neither of them had spotted that their disease arose from their habit of holding the pills in their right hand before swallowing them. By passive transfer tests—i.e., holding the bottle in the other hand—I was easily able to transfer the disease to the opposite palm. This was a much more elegant method of demonstrating its origin than by holding the tablet itself and brought home the point that it was advisable to empty the pills into a spoon.

Several points remain to be elucidated. Why has the syndrome not been spotted for so many years—after all we have been using phenindione for quite a while. Is it only dindevan that does it? What of 'Hedulin' and 'Indema', which as far as I know are different trade names for the same substance? Is it associated with the alkaline tide of meals and only found in those who take their pills some time *after* a meal, or can it occur in those taking their pills while in a fasting state? All these points are at present under intensive investigation* and I hope one day to publish a further report on this new and fascinating syndrome. Confirmatory reports are awaited with interest.

* * *

Yesterday I received through the mail a small long-playing record from an American pharmaceutical firm. One side recorded a one-year clinical study of the firm's newest preparation; the other the Vienna State Opera Orchestra playing Brahms' *Hungarian Dances*. The drug advertised is a tranquilliser.

1. Douthwaite, A. H. *Brit. med. J.* 1956, ii, 895.

* Supported (in part) by Research Funds UR MAD 43 and IM DIM 999.

Letters to the Editor

ADMINISTRATIVE THERAPY

SIR,—You are to be congratulated on your foresight in accepting, and giving pride of place in last week's issue to, Dr. Clark's excellent paper.

The subject is in its infancy and the paper gives a clear account of matters upon which the future success or failure of the psychiatric hospitals and perhaps the general hospitals of this country may depend.

These matters have until now been bedevilled by national and local politics, the Ministry need for control through biddable men, the wild individualism of hospital medical staffs, and the now notorious and non-merited epitaph of so many medical superintendents "Administration does not count".

It is hoped that Dr. Clark's paper will arouse interest in the subject at a date early enough to prevent the present generation of administrative therapists, administrative psychiatrists, medical superintendents, or whatever name they go by, being the last of their kind, for unless sufficient interest is aroused the treatment of the patient as a member of a group, which in the hospital he is, will be disregarded; psychiatry, covering nearly 50% of all hospital beds, will become the appendage of business management, and it is for the consideration of general hospital medical staffs that already they have travelled far along this road.

GEORGE MCCOULL
President, Medical Superintendents' Society.

Prudhoe and Monkton Hospital, Prudhoe-on-Tyne.

SIR,—Dr. Clark, in his second last paragraph, says ". . . the most important task of the administrative therapist is to establish the atmosphere of the hospital. . . . He needs openness, consistency, respect for everyone's human dignity, and a welcome for everyone's contribution . . ."

This is very true. I think it is a pity, however, that this is the nearest that Dr. Clark gets to facing the fact that senior medical staff, by which I mean consultants and S.H.M.O.s, must take part in the administration of the mental hospital and must share with the superintendent in the making of policy decisions if the hospital is to work at its maximum efficiency. This fact seems to me to be recognised in the Ministry's recommendation that medical advisory committees, consisting of senior medical staff, should advise hospital management committees and regional hospital boards. Surely this implies that senior medical staff share with the medical superintendent ultimate responsibility for every aspect of hospital functioning. They certainly cannot discharge this responsibility unless they share in the making of policy decisions.

The tendency of consultants to indulge in "the flight into treatment", which Dr. Clark describes, may very well be a manifestation of the "apathy and withdrawal" described by Schwartz as occurring in groups deprived of the responsibility attaching to their position.

I also regret that Dr. Clark appears to believe that "As he [a medical administrator] treats his staff so will they treat the patients". This statement is self-evidently untrue. But perhaps Dr. Clark is merely saying again what he has said earlier in his article—that disturbed relationships between senior medical staff result in disturbed relationships between nursing staff and patients.

D. BARDON.

Shenley Hospital, near St. Albans.

THE FUTURE OF THE PUBLIC HEALTH LABORATORY SERVICE

SIR,—The answer to A Provincial Pathologist (April 12) is that despite the millions of pounds spent annually, and largely wasted, on antibiotics, and the serious problem of hospital infection, bacteriology is not recognised as a specialty in the National Health Service in England and Wales. The only bacteriologists connected with the hospital service are the select band employed by the universities in the medical schools. If a bacteriologist wishes to obtain a post in the National Health Service he has to do so in the guise of a general pathologist or an assistant pathologist and work under the direction of a consultant pathologist-in-charge who is either a morbid anatomist and cares nothing for bacteriology, or a clinical pathologist who thinks he knows it all (as well as hæmatology, clinical biochemistry, surgical histology, and forensic pathology).

If A Provincial Pathologist studies the literature he will know that nearly all the significant contributions to medical bacteriology in the past ten years have been made by workers outside the National Health Service. If he studies the advertised vacancies he will see that the only advertisements for hospital bacteriologists come from Scotland, where there is a more enlightened view of the importance of bacteriology in the diagnosis and treatment of infective disease and the control of hospital infection.

A LONDON BACTERIOLOGIST.

TOXÆMIA OF PREGNANCY

SIR,—Professor Theobald (April 12), by casting algebraic pebbles into the ripples of the toxæmic clinical pattern, cannot obscure the design whose periphery on occasion develops into the eclamptic wave, despite the prophylactic antenatal oil applied to the surface of the pool to still its waters.

His classification of the toxæmic state correctly interpreted reflects the normally mounting severity of the underlying renal changes responsible for the production of, at first, the œdema (a result of the reduction of the glomerular filtration), next, the hypertension (a result of cortical renal ischæmia), and, finally, the albuminuria (a result of the slowing down of the renal circulation). In fact his data, unwittingly, further support the renal intervention, by demonstrating that a severe degree of renal ischæmia if prolonged leaves its stigma on the kidney in close resemblance to the experimental effect of sufficiently prolonged clamping of the renal artery in animals, in whom irreversible renal changes are thereby produced. His data also offers proof of the uterorenal reflex, for by denervation of the uterus and interruption, thereby, of the uterorenal pathway he has succeeded in preventing toxæmia—an achievement for which he deserves the highest credit, if I may be permitted so to judge.

Conjecture of disharmonious function of various hormones in the ætiology of toxæmia has no validity in fact or by inference from available data. Such disharmony cannot be advanced to explain postpartum hypertension and proteinuria, which already find satisfactory explanation on the basis of the uterorenal reflex.[1] Although Professor Theobald admits the intrusion of an inadequate blood-supply to the placenta as being of ætiological significance, he completely fails to appreciate the influence of the resistance to stretch of the uterine muscle in provoking it and thereby overlooks the stimulus responsible for the uterorenal reflex that by imposing renal ischæmia causes the toxæmic manifestations.

The impact of geography and diet are those of superimposed effects on the ætiology, acting either for good or for ill. They can be so assessed inasmuch as they help

1. Sophian, J. *Lancet*, Feb. 22, 1958, p. 434.

to influence the size and the chemical constitution of the body compartments, which in their turn benefit or impede the renal function disturbed by the pre-eclamptic process.

London, W.1. JOHN SOPHIAN.

SALT IN PREGNANCY

SIR,—Dr. Robinson (Jan. 25) undoubtedly showed great moral courage, for she must have realised from the first that she would cause among obstetricians feelings of shock, surprise, and even disbelief, when stating that she treated 20 patients with toxæmia of pregnancy, with good result, by allowing them extra salt.

It is this part of her investigation that interests me most. Personally I regret that Dr. Robinson did not measure the aldosterone output during periods of salt-free diet and compare it with the output during periods when extra salt was given.

According to prevailing opinion, when extra salt is given the production and urinary output of aldosterone diminish; the same may be true of the quantities of aldosterone stored in the adrenal cortex, so that when this and other hormones are suddenly liberated from the adrenals (e.g., by histamine produced by an antigen-antibody reaction) smaller quantities of hormones are available and ultimately reach the circulation, which circumstance must have a favourable influence on the course of toxæmia.

However, Dr. Robinson's results are so unexpected that I quite agree with Dr. Thomas (April 12, p. 793) that it is of the utmost importance to verify or challenge these results, because they may very well modify our therapeutic concept of toxæmia of pregnancy.

Amsterdam. R. SCHUURMANS.

ONE RADIOGRAPH TO EXCLUDE PLACENTA PRÆVIA

SIR,—Dr. Earn and his colleagues in your issue of April 19 have done well to draw attention to the efficacy of soft-tissue placentography in excluding placenta prævia. One wonders though if they have not oversimplified the picture.

Given ideal conditions one tilted standing lateral view of the uterus and pelvic brim is enough to diagnose placenta prævia or exclude it where the radiographic signs are definite. But not infrequently conditions are not ideal and then the signs may be indefinite. Intestinal stasis and an abundance of gas that accompany rest in bed will often interfere with accurate interpretation. Around 34 weeks too the smallness of the fœtal head may allow the existence of a minor though significant degree of placenta prævia without much displacement. Even slight hydramnios may be enough at this stage to make diagnosis indefinite.

But what your contributors have failed to stress is the great need for the fœtus to be lying axially with one or other pole centrally over the brim at the time of the X-ray. It is the responsibility of the obstetrician to see to this and to be present at the radiographic examination for this purpose—otherwise a useless and misleading film may be taken and the patient and fœtus needlessly exposed.

When we published [1] the results of 275 placentograms in your journal in 1955 we stated that the error should be nil if the diagnosis "border-line placenta prævia" in doubtful cases is used. We made 3 errors in diagnosing 50 placenta prævias—none serious. In our next 275 placentograms there were 40 placenta prævias with 1 diagnostic error due to a thin membranaceous placenta prævia. Thus in 550 placentograms for diagnosing 90 placenta prævias the error was less than 1%, the combined fœtal mortality (corrected) for placenta prævia was 8·8% and there was no maternal death. The 17% error of your contributors for placenta prævia we feel is much too high and is in danger of detracting from the merits of an accurate technique.

We think that soft-tissue placentography is a very reliable method so long as proper regard is given to its basic principles. One radiograph certainly should be the aim though not always achieved (it has been ours for some time past), and for this reason all possible care should be given to both choice of the patient and suitability of the fœtal lie.

The London Hospital, E.1. ROBERT PERCIVAL. STANLEY MURRAY.

1. *Lancet*, 1955, i, 1045.

SIR,—I cannot entirely agree with Dr. Earn and his colleagues that a single lateral radiograph of the uterus is sufficient to exclude placenta prævia. Admittedly they would be correct in the vast majority of cases, but there is one fallacy which they appear to have overlooked. I have now had more than ten years' experience of this method, and on several occasions I have found normal appearances in the lateral radiograph with evidence of placenta prævia—sometimes of a major degree—only in the anteroposterior view taken in the semi-erect position.

Harrogate. FRANK REID.

SUPPORT FOR THE FAMILY

SIR,—In your leading article of April 5, you stated that as a result of my survey of old age in Bethnal Green, I had put forward the suggestion of a constant attendance allowance to be offered to relatives who undertake the care of bedridden old people. In fact I suggested that the allowance might be payable not to relatives but to bedridden pensioners themselves; this was only one of a number of recommendations put rather summarily at the end of a book devoted to the family life of people of pensionable age.

I found that the strongest and most enduring relationships between adults in a family were those between people who gave a great deal to each other, every day as well as in emergencies. If her daughter had a paid job a grandmother often prepared meals and looked after one or more of the grandchildren (whether or not they lived with her) while the married daughter, for her part, did the shopping and heavy cleaning. Old people were invariably less happy when they could no longer "do their share" and contribute materially to a relationship. It seems there may be three or four bedridden old people at home for every one in hospital or residential home. Too often a relative bears the strains of nursing with little support, while the old person has no opportunity of useful occupation or of making the relationship of dependence less one-sided. This is why I argued that an allowance should be paid to the old person rather than to the relative. He or she may then be in a better position to pay independently for any special needs and to repay the relative for the care given. Of course, many practical questions relating to a "personal attendance allowance" would remain unanswered in thus settling a matter of principle by appeal to the findings of one sociological investigation.

Department of Social Science, London School of Economics and Political Science, London, W.C.1. PETER TOWNSEND.

*** We refer again to Mr. Townsend's valuable survey in an annotation on p. 895.—ED. L.

EPIDEMIOLOGICAL INQUIRIES

SIR,—Working in the field of health education, we are very dependent on the findings of epidemiology, but being accustomed to think that the knowledge and attitudes of the people concerned may be a vital factor in the epidemiology, we are often disappointed that it is not generally taken into account.

I am at present engaged in working out an epidemiological inquiry card which, in addition to the usual information about personal and environmental factors, is intended to include questions regarding recognition of the condition by the population at risk, knowledge about the condition, attitudes towards it, and finally behaviour regarding it.

As I am sure other workers have considered this point, and as I am particularly aware of the difficulty of validating such questions, I should be glad if you would give me space to ask any who are interested or who have trodden this path, to communicate with me.

Central Council for Health Education,
Tavistock House North,
Tavistock Square,
London, W.C.1.

JOHN BURTON
Medical director.

THE DOCTOR'S ATTITUDE TO HIS PATIENT

SIR,—Although it is hardly possible to have the Rev. John Wesley read Scanner's letter (April 12) ("The emotional history should not have any direct influence on the doctor's clinical opinion . . . the clinician reaches that opinion without the emotional history, and can give just as good advice and can get just as good a result without ever hearing it"), we must hope that Scanner's patients will insist that he reads the Journal of the Rev. John Wesley: "Whence came this woman's pain (which she would never have told had she never been questioned about it)? . . . Why, then, do not all physicians consider how far bodily disorders are caused or influenced by the mind?" (*Lancet*, April 12, p. 763).

T.

CORONARY-ARTERY DISEASE

SIR,—In your editorial (March 22) Horlick and Craig [1] are quoted as showing that "in some subjects such an action [specific cholesterol-lowering effect] was seen on giving ethyl linoleate and linoleic acid in pure form".

While it is true that when ethyl linoleate was substituted for the mixed fats of the normal diet, the serum-cholesterol fell, we also noted that when ethyl linoleate was given to an individual on a low-fat diet whose cholesterol levels had stabilised, there was no further fall in cholesterol. We concluded that ethyl linoleate possessed no specific cholesterol-lowering effect and that effects observed with it were due to the removal of animal fats from the diet when isocaloric diets containing linoleate were prepared. Our results differ from those of Kinsell et al.[2] who reported that linoleate lowered the blood-cholesterol of subjects on a low-fat diet.

Careful perusal of their data (2 cases) shows that in case 1 (27-year-old male with familial hypercholesterolæmia) the serum-cholesterol fell from a level of 326 on the low-fat diet to a level of 291 at the end of seven days on 80 g. of ethyl linoleate daily. In their second case (19-year-old male with fractured femur) the cholesterol fell from 145 at the end of two weeks on a fat-free diet to 95 after one week on 80 g. of linoleate per day.

Considering the rather wide fluctuations in day-to-day cholesterol levels seen in both of these subjects the results can only be considered significant in the second subject. It should be noted that whereas our subjects were healthy and mobile, carrying on their regular work as medical students, Dr. Kinsell's subject was immobilised with a healing fracture. It is conceivable that such differences may influence the results obtained.

Because of the scanty data available, I believe that it would be premature to draw any conclusions concerning the role of essential fatty acids in cholesterol metabolism and atherogenesis.

University Hospital,
University of Saskatchewan,
Saskatoon.

L. HORLICK.

LONG-TERM ANTICOAGULANT THERAPY FOR CORONARY-ARTERY DISEASE

SIR,—Your leading article (Feb. 22) gives the impression that a novel simplified technique has been devised by Manchester [1] to solve the problem of venepuncture for the multiple prothrombin tests required. This impression is quite erroneous (and Manchester [2] himself does not subscribe to this notion), since similar techniques were suggested by Quick [3] and Kato [4] for assessing prothrombin deficiency in infants. We [5] adopted the better components of these procedures and, using a modification of a method [6] for freeze-drying thromboplastin, elaborated a simplified technique using capillary whole blood. In effect, all the operator has to do is to reconstitute the dried brain extract with water and mix 0·02 ml. of it with an equal volume of capillary blood and note the clotting-time. We claimed no originality for the test, but recommended its use by the practitioner, when laboratory facilities for the usual one-stage prothrombin method during anticoagulant therapy were not available.

Our students are instructed in the capillary technique, because many will become practitioners in the country away from laboratory facilities. The method became so popular that, when long-term anticoagulant therapy was instituted in Dr. Suzman's unit at the Johannesburg General Hospital, it was used in controlling therapy in outpatients. Today over 50 estimations are done at the weekly follow-up prothrombin index (P.I.) clinic, and the first detailed analysis of the results was published by my colleagues [7] who, together with others, speak highly of the method. This report deals with 82 cases treated continuously with anticoagulants for periods up to seventy-six months.

Although the simplified technique has been known for a long time it is surprising that it has not been applied more generally. When our paper was abstracted by Brown,[8] he rightly criticised us for not having provided more statistical analysis than the bare coefficient of correlation of 0·82 between the capillary method and the usual laboratory method. However, he misinterpreted our caution in applying the method for general use in anticoagulant therapy as an indication that the technique was inaccurate. We were concerned that the method might be used for the "prothrombin response to vitamin K" test in the differentiation of intrahepatic and extrahepatic jaundice,[9] and so bring this diagnostic test into disrepute. However, the deviation between the capillary and intravenous methods can be considerably reduced by practice and is no longer a hindrance to the acceptance of the procedure for the control of anticoagulant therapy.

1. Horlick, L., Craig, B. M. *Lancet*, 1957, ii, 566.
2. Kinsell, L. W., Michaels, G. D., Friskey, R. A., Splitter, S. *ibid.* Feb. 15, 1958, p. 334.
1. Manchester, B. *Ann. intern. Med.* 1957, **47**, 1202.
2. Manchester, B., Rabkin, B. *Circulation*, 1954, **10**, 691.
3. Quick, A. J. *Proc. Soc. exp. Biol.*, N.Y. 1939, **42**, 788.
4. Kato, K. *Amer. J. clin. Path.* 1940, **10**, 147
5. Stein, H. B., Wallace, B. V. *S. Afr. med. J.* 1952, **26**, 353.
6. Souter, A. W., Kark, R. *Amer. J. med. Sci.* 1940, **200**, 603.
7. Suzman, M. M., Ruskin, H. D., Goldberg, B. *Circulation*, 1955, **12**, 338.
8. Brown, A. *Abstr. World Med.* 1952, **12**, 297.
9. Stein, H. B. *S. Afr. J. med. Sci.* 1942, **7**, 72; *ibid.* 1944, **9**, 111.

In their authoritative book on blood-coagulation, Biggs and Macfarlane [10] also dismiss microtechniques as not being sufficiently reliable. Our own tendency to exercise caution in recommending the capillary method is due to the fact that no laboratory worker will voluntarily substitute it for the usual Quick [11] technique; I myself [12] have written disparagingly of "bed-side" procedures for estimating prothrombin, since it is impossible to perform multiple tests on the same sample or to control the temperature and other conditions of the test. However, mass-production demands simplified methods of control, and the experience of the local outpatient P.I. clinic shows that the method is one in which skill is soon acquired by attentive medical registrars and house-physicians.

At one end of the scale of one-stage prothrombin methods there are simplified capillary techniques, and at the other the relatively complicated "prothrombin and proconvertin" method of Owren and Asa.[13] All the methods require care and attention to technical details, of which the most important is the concentration and standardisation [14] of the only significant reagent used in the test—namely, tissue (brain) thromboplastin.

Department of Pathology and Microbiology,
Witwatersrand University Medical School,
Johannesburg, South Africa. H. B. STEIN.

TRANSTHORACIC LIGATURE OF ŒSOPHAGEAL VARICES

SIR,—In my book, Portal Hypertension, I appended the name of George Crile, Jr., to the operation of transthoracic ligature of œsophageal varices because I believe that he was the first to describe it adequately. It has never been my intention to give the impression that Dr. Crile himself had written the chapter, as suggested by the review in your issue of April 12. The chapter was written by me and the methods are strictly my own, following what I understand to be those of Dr. Crile. I sincerely hope that Dr. Crile will forgive me for any misunderstanding that may have arisen.

London, W.1. ALAN H. HUNT.

*** We ask Dr. Crile's forgiveness for our part in this misunderstanding.—ED.L.

THE HARVARD STEP TEST

SIR,—There appears to be some disagreement among experts as to how this test should be conducted.

In *The Physiology of Muscular Exercise* by Schneider and Karpovich and in *Circuit Training* by Morgan and Adamson, it is stated that pulse readings should be taken 1–1½ mins., 2–2½ mins., and 4–4½ mins. after 5 minutes of step-ups. Other books by Larsen, McCloy, Clarke, and Reidman quote the time for pulse readings as 1–1½ mins., 2–2½ mins., and 3–3½ mins. It appears therefore that there are two separate tests. In an endeavour to find which, in fact, is the Harvard step test I wrote to the American Association for Health, Physical Education and Recreation. They have confirmed that Dr. Lucien Brouha, of Harvard University, advocates the second method quoted above, and sent me a reprint, from the *Research Quarterly*, of an address delivered at Springfield College entitled The Step Test—A Simple Method of Measuring Physical Fitness for Muscular Work in Young Men. This is dated December, 1942.

It does not seem to matter much which test is used as both are an effective way of measuring cardiovascular fitness. What does, however, matter is to know, when comparisons are being made between the physical-fitness indices of well-known athletes, that the results quoted have been computed in the same manner if a fair comparison is to be made. I believe that the Amateur Athletic Association's coaches have been testing athletes in this country and using the first method of testing and not the recognised method of conducting the Harvard step test.

An authoritative statement on the correct method of conducting this test and computing the physical-fitness index would be most welcome and a great help to physical educationists and athletic coaches.

Physical Education Department,
St. Luke's College, Exeter. W. R. CAMPBELL.

RADIATION, LEUKÆMIA, AND MALIGNANT DISEASE

SIR,—An important point has been lost sight of in the strenuous correspondence concerning the communication by Dr. Alice Stewart and her colleagues,[1] regarding the relationship of radiation, leukæmia, and malignant disease: the paper was a *preliminary* communication. Dr. Stewart, one imagines, was so concerned at the possible importance of their initial findings that this publication was submitted at once; surely it is equally admirable that the Editor of *The Lancet* commented upon it in an editorial.[2] A preliminary communication means what it says, and as one of those who has been most generously and courteously allowed to see some of the data, may I endorse the pleas of you and Dr. Stewart to wait and see. After such attacks it can be understood that the final report will be being very carefully prepared.

I could not help raising my eyebrows at Dr. Jackson's accusation (March 29) that Mr. Hewitt has "merely found what he sought." I am afraid that perhaps Dr. Jackson does not wish to find what he may see.

Child Development Unit,
University of Louisville School of Medicine
Department of Pediatrics
Louisville, Kentucky. FRANK FALKNER.

TREATMENT OF OBESITY

SIR,—Dr. Mullins' letter of April 5 on the perennial problem of the overweight rightly points out the dangers of obesity and the advantages of reducing to normal limits. In theory the majority of overweight patients reducing intake by a diet lose weight. In practice for a variety of reasons it is not so easy for the individual to stick to a diet. Help is needed; but I am surprised to find she considers strict supervision is essential, as this is contrary to my experience on the whole.

For a number of years I have been employing weight reduction methods using only hydrophilic colloids. These are given ½ to 1 hour before normal mealtimes in the form of liquid preparations which "deceive" the stomach and produce an effective anorexia. (One of these methods suitable for hospital use is described elsewhere.[3]) In the few cases of apparent failure or partial failure almost all such patients admitted that they had not followed instructions, had been casual about them, or had decided they no longer wished to reduce. Only in such cases does strict supervision become imperative.

I note that Dr. Mullins uses various drugs, some of them very potent, in her supervised regime. However, in many cases reducing can and ought to be carried out in the patient's home, and if this is to be done without strict supervision certain essential conditions must be observed. The criteria which seem important to me when considering a "weight-off" method are: (1) complete freedom from danger, non-toxicity, and complete absence of side-effects (this, in my opinion, rules

10. Biggs, R., Macfarlane, R. G. Human Blood Coagulation and its Disorders; p. 334. Oxford, 1957.
11. Quick, A. J., Stanley-Brown, M., Bancroft, F. W. *Amer. J. med. Sci.* 1935, **190**, 501.
12. Stein, H. B. *S. Afr. J. med. Sci.* 1941, **6**, 93.
13. Owren, P. A., Aas, K. *Scand. J. clin. lab. Invest.* 1951, **3**, 201.
14. Stein, H. B., Abrahams, O. L. *S. Afr. J. med. Sci.* 1954, **19**, 75, 79, 91.

1. Stewart, A., Webb, J., Giles, D., Hewitt, D. *Lancet*, 1956, ii, 447.
2. *ibid.* p. 449.
3. Badham, J. N. *ibid*, 1953, ii, 1316.

out the use of potent "drugs"); (2) efficiency of action; (3) simplicity of use; (4) low cost; (5) that the rationale should be capable of convincing translation into a simple story which the patient can appreciate—this I consider most necessary in gaining the patient's full cooperation. Certain of the hydrophilic colloid group fulfil these criteria admirably and are capable of preparation at low cost in hospital pharmacies. However weight reduction methods are "modish" creatures. In 1912 there were at least 24 proprietory "treatments" [4] all of which have fallen by the wayside. Today a dozen or so methods come to mind including 3 or 4 potent drugs, and in the future we shall no doubt meet new variations of method.

St. Albans. J. N. BADHAM.

USE AND TOXICITY OF SULPHONAMIDES

SIR,—It is good that Dr. Arneil (April 19) has sounded what I hope will be the death knell of that dangerous drug, sulphamerazine.

It is good, too, that in your annotation you emphasise the value and safety of sulphadimidine. Alas though, too many doctors only know of this drug as 'Sulphamezathine' which, to the ear, sounds little different from sulphamerazine. I have often found it necessary, when recommending the use of sulphadimidine, to add the proprietary name by way of explanation.

Cannot the manufacturers suggest a way of avoiding this confusion? Greater prominence of the official *B.P.* name on their labels would help.

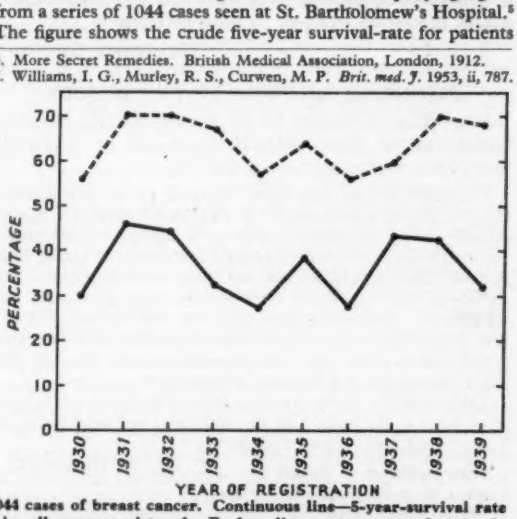
Derby. BERNARD M. LAURANCE.

TREATMENT OF BREAST CANCER

SIR,—Mr. Bond and Dr. Waterhouse (Feb. 22) and Dr. George Crile, Jr. (April 5) are correct in implying that "the strong challenge from the Mayo Clinic" is indeed no challenge at all, except perhaps to those folk who seem unable to assess the proper significance of published figures. Your editorial certainly presents the Mayo Clinic figures in somewhat tendentious fashion, and though you find it difficult to compare "figures from the Mayo Clinic and those from Edinburgh" one is glad to see that your correspondents do not experience the same difficulty.

The close correlation between survival-rate and the stage of the disease is well brought out in the accompanying figure from a series of 1044 cases seen at St. Bartholomew's Hospital.[5] The figure shows the crude five-year survival-rate for patients with breast cancer registered between 1930 and 1939 inclusive. Also shown is the percentage of cases placed in clinical stages I and II each year. The graph of survival-rate is closely paralleled by that of the clinical staging, and this figure is analogous to that shown in Mr. Bond and Dr. Waterhouse's letter.

4. More Secret Remedies. British Medical Association, London, 1912.
5. Williams, I. G., Murley, R. S., Curwen, M. P. *Brit. med. J.* 1953, ii, 787.



1044 cases of breast cancer. Continuous line—5-year-survival rate in all cases registered. Broken line—percentage of cases in clinical stages I and II.

The age-distribution of the patients is also relevant in the comparison of different series, yet you make no mention of this point. Even in the absence of this information about the Mayo Clinic series, it would seem that the figures do no more than support the maxim that the apparently good results are mainly, if not wholly, the results of selection.

Radlett, Herts. REGINALD S. MURLEY.

NEW METHOD OF PHENOBARBITONE ADMINISTRATION

SIR,—Although my experience here is limited to one "hystero-epileptic" patient, and a period of four weeks, Dr. Pearson's (April 19, p. 853) critical comments on Dr. O'Connor's innovation (March 22, p. 609) prompt me to say that this patient (who over the last two years proved impervious to any form of therapy) has changed beyond recognition since being put on phenobarbitone 'Spansules.'

Wyke House Hospital, Isleworth, Middlesex. H. PULLAR-STRECKER.

FLEXION SPASMS AND CONTRACTURES IN SPINAL-CORD DISEASE

SIR,—My interest in the paper by Mr. Platt, Dr. Ritchie Russell, and Dr. Willison (April 12) prompts me to make the following comments on some of their statements.

It is indeed gratifying that clinicians are becoming more and more aware of the various intrinsic and extrinsic factors that influence spasticity in patients suffering from spinal-cord afflictions, and, in this connection, the beneficial effect of utilising postural reflexes in the counteraction of flexor spasms, as postulated by previous workers, is confirmed by the authors.

On the other hand, their sweeping statement that, in cases of spinal-cord disease causing severe paraplegia, a day or two in bed may lead to permanent loss of all capacity to be other than chair-ridden or even bed-fast is, to say the least, exaggerated, if not altogether misleading. Furthermore, I was surprised to read the authors' criticism of anterior rhizotomy of lumbar and sacral roots for relieving spasticity by claiming that it produces such wasting of gluteal muscles that sitting becomes uncomfortable. This view will hardly be acceptable to neurosurgeons who have had experience with this method, nor is it in accordance with the vast experience gained on patients with conus/cauda-equina lesions or residual paralysis following poliomyelitis. If anterior rhizotomy is contemplated in patients where severe and intractable spasms and contractures of the hip flexors and adductors are predominant, complete atrophy of the gluteal muscles can be avoided by sparing L4 or L5 roots.

Judging from the immediate postoperative condition of their third case, following their technique of combined bilateral obturator resection and iliopsoas resection in one session, it is obvious that their procedure is no less formidable and hazardous to the patient than anterior rhizotomy, and anyone contemplating this type of operation would be well advised to carry it out in stages.

The authors, in the techniques of physical therapy described, have very closely followed the principles and details of treatment introduced and practised during the last 14 years in the National Spinal Injuries Centre, Stoke Mandeville, and have freely used its resources. In their description of their first case, whom I had the opportunity to see myself in consultation, I missed any reference to the remarkable beneficial effects of hydrotherapy in our swimming-pool—not only as an overall training effect but, indeed, in this particular case, as a most efficient method of relieving spasticity. Moreover, this patient is photo-

graphed in a walking-chair which I designed a few years ago specifically for exercises for paraplegics with complete or incomplete lesions. I assume that the authors did not realise that this design had not been published (it will be described in detail elsewhere), as they would otherwise no doubt have made due reference.

National Spinal Injuries Centre,
Stoke Mandeville Hospital,
Aylesbury, Bucks. LUDWIG GUTTMANN.

*** This letter has been shown to Mr. Platt and his colleagues, who write: "We are sorry that Dr. Guttman is so critical of our methods of treating flexion spasms and contractures. Our approach to the problem differs in several respects from those which he has developed so successfully for cases of traumatic paraplegia, but we think he will find that the method now described proves to have some important advantages. We were unaware that the walking-chair used to support the patient for the photograph had any special features."—ED. L.

SIR GEORGE SAVAGE AND THE SANDS OF TIME

SIR,—I saw a good deal of Sir George Savage (1842-1921), as my father was virtually an old Guy's man and a personal friend of Addison, who presented him with a copy of his bust that used to stand in the hall of his house in Grosvenor Street.

Savage contributed many interesting articles, written for the students, to the *Guy's Hospital Gazette*, which I eagerly read, as my father continued to be a subscriber to the *Gazette* until his death. One of the articles that fascinated me was entitled The Sands of Time, and I think it ought not to be forgotten. It described some of the mental troubles of old people, and fancifully compared the mind of an old person to the sands on a desert, blown about by the wind. A storm would blow away the top layer of sand and expose an underlying layer, which might be taken to correspond to a fanciful memory of remorse for having once stolen a sixpenny piece as a boy. A fresh storm might expose another layer, which unfortunately corresponded to the memory of having once told his father a falsehood. At last fresh winds might arise and cause a new layer to be reached, which fortunately corresponded to one of the happiest memories of his life.

London, N.W.1. F. PARKES WEBER.

INFANTILE GASTROENTERITIS

SIR,—The answers to many of Dr. Librach's questions (April 5) relating to fundamental work on infantile intestinal flora are to be found in various articles [1–5] as well as textbooks of pædiatrics and bacteriology.

Dr. Librach is no doubt aware that many commensals (including *Escherichia coli*) are pathogenic outside their normal habitat, and that some are potentially so in their own systems—e.g., pneumococci and staphylococci in the respiratory tract. In this example there is a further similarity to *Esch. coli* gastro-enteritis in so far as certain types (or strains) of these organisms are involved more than others in the production of pneumonia.

In all infections the host plays an important role. In the case of gastroenteritis, favourable living conditions in the small bowel for *Esch. coli* are provided by the diet of cow's milk (the carbohydrate/protein ratio amongst other factors). With regard to transmission, the agents in intestinal infections (including viruses) enter the bowel usually by mouth, at which they may arrive in many ways, and there seems to be no reason to doubt that infection with *Esch. coli* is acquired in the same way as with shigellæ and salmonellæ.

It seems to me that the interpretation of the presence in fæces of an "enteric" virus, which may be as widely distributed as *Esch. coli*, would present almost the same problems as exist with the serotypes of *Esch. coli* in question, which have been associated consistently with the disease (if I may call it so) at least since the 1920s.[6] Finally, for a comprehensive account of the ætiology I would refer Dr. Librach to the Royal College of Physicians of Edinburgh Publication no. 5.[7]

City Hospital, Greenbank Drive,
Edinburgh, 10. G. SANGSTER.

1. Davison, W. C. *Amer. J. Dis. Child.* 1925, **19**, 743.
2. Gertsley, J. R., Howell, K. M., Nagel, B. R. *ibid.* 1932, **43**, 555.
3. Hall, I. C., O'Toole, E. *ibid.* 1935, **49**, 390.
4. Blacklock, J. W. S., Guthrie, K. J., Macpherson, I. *J. Path. Bact.* 1937, **44**, 721.
5. Crowley, H., Downie, H. W., Fulton, F., Wilson, G. S. *Lancet*, 1941, ii, 590.
6. Adam, A. *Zb. Kinderheilk.* 1927, **116**, 8.
7. Smith, J. Royal College of Physicians of Edinburgh Publications, no. 5. 1955; see *Lancet*, 1955, ii, 1182.
8. *Canad. Anæsth. Soc. J.* 1956, **3**, 216.

POSTOPERATIVE HYPOTENSION

SIR,—As you say (March 15), postoperative hypotension is relatively common; and it is seen particularly in patients returned to the horizontal from the lithotomy position.

In 176 cases of major vaginal surgery, a significant degree of hypotension was found in 101 (57%).[8*] Of a series of 75 cases of anæsthesia for perurethral prostatectomy, which I hope to publish later, in 36 (48%) the systolic pressure fell to below 100 mm. Hg, or to a level more than 50 mm. Hg below the preoperative level, when the legs were lowered.

As you also say, routine recording of the blood-pressure after operations is not common practice. Quite a number of the above patients had none of the recognised signs of hypotension. Indeed, they had an easily palpable pulse at a rate within normal limits: they were dry, warm, and of good colour; and they were conscious and cooperative.

The dangers that beset these patients may be illustrated by two cases.

Both patients, on return to the ward, appeared so well to the nurse that they were propped up to encourage drinking. Both quickly became unconscious, had a further fall in blood-pressure, and soon showed signs of shock. Fortunately, laying the patients flat and applying restorative measures resulted in obvious improvement.

Until recovery-rooms with trained staff are as standard in the theatre equipment as operating-tables and anæsthetic machines, such incidents are certain to recur. Meanwhile it is of vital importance that postoperative hypotension should be recognised and that doctors and nurses should be aware of its inherent dangers.

Glasgow. WOOLFRED SNIPER.

PILONIDAL SINUS OF THE UMBILICUS

SIR,—With reference to the article by Dr. Sadeghi-Nejad and Mr. Rains (March 15), it may be of interest to report a similar case.

A hirsute Italian man aged 34 came to see me recently complaining of a sore navel. Examination revealed a similar picture to the illustration shown; a bundle of downward pointing hairs with roots orientated inwards, protruding from the umbilicus, in which there was some moist intertrigo. The umbilicus was held open with forceps and the bundle was withdrawn. Most of the hairs were free, but the root ends of a few were embedded in a small mass of granulation tissue lying at the bottom of the pit. The granulations were touched with silver nitrate and the soreness subsequently subsided.

I referred him to Mr. Gordon Bohn who found a few more loose hairs at the bottom of the umbilicus and agreed that no further treatment seemed necessary.

Sonning Common, nr. Reading. P. M. R. HEMPHILL.

Obituary

DANIEL ALEXANDER DAVIES

B.Sc. Wales, F.R.C.S.

COMBINING general practice with surgery in a way which has now become difficult, Alec Davies, of Walmer, was a man who brought warmth and vigour into all he did. His strong surgical leaning found expression in his work at the Victoria Hospital, Deal; but he was essentially a good all-round doctor, whose therapeutic ability came largely of liking people and taking much trouble to help them.

Entering St. Thomas's Hospital in 1920 with a B.SC. from Wales, he qualified in 1922 and later became resident anæsthetist at the hospital. Soon after taking his F.R.C.S. in 1926 he settled in Deal, where he quickly built up a reputation by his high standards of practice. Over the years he came to number among his patients several eminent colleagues, and their confidence in him was a tribute to his medical skill and his honesty of purpose.

In the 1914-18 war he had served in the Welsh Guards (in which he always retained great pride and interest), and in the second war, though aching to serve abroad, he managed to relieve his feelings by combatant training of the local Home Guard. Though there was, in the end, no invasion, there was also war surgery to be done in Deal. The bombing and shelling of the early days and the damage done to his home perturbed him not at all, but merely increased the trenchancy of his remarks about the enemy and all their works.

Soon after the war Davies had the first, and almost fatal, attack of coronary thrombosis which he described so vividly in our Disabilities series. His method of managing it was the then unusual one of ignoring symptoms and returning at the earliest possible moment to full work. Nor did he confine his interests and activity to his practice. The St. John Ambulance Corps, the Royal Cinque Ports and Sandwich Golf Clubs, the Betteshanger Rugby Football Club all enjoyed his constant support. He kept up a close attachment with St. Thomas's Hospital and had lately been elected a representative of St. Thomas's on the United Hospitals Club. He also found time to serve on the Kent and Canterbury executive council and on the South East Kent hospital management committee.

The following tributes show something of his quality as a man and his skill as a doctor. H. L. writes:

Alec Davies was an able man, practical and gifted with a large fund of common sense, a clever diagnostician, and a general-practitioner surgeon of the first rank. Kindness and sympathy he gave readily to anyone who was in real distress, but he spent little time on malingerers, he hated humbug and any action he thought not straight. He was progressive and kept his knowledge up to date not only by the study of journals and modern textbooks, but by frequent visits to his old hospital where he attended the wards, operating-theatres, and occasional lectures. One could not fail to be impressed by the way in which he tenaciously clung to what was good in the clinical teaching of the days when he was a student and on the house. During his visits to St. Thomas's he enjoyed meeting students, asking them questions, ragging them, and giving them tips that would be useful to them when they were in practice. On looking back, one feels that if he had had the opportunity he would have been a very sound and popular teacher.

J. S. H., who worked with him for many years, describes him as a general-practitioner specialist who was "as much at home as a family doctor in a miner's house as in the operating-theatre of his local hospital".

We shall always remember Alec Davies (he continues) for his disarming forthrightness of speech, irrespective of the company in which he found himself. His comments on any trying situation were invariably direct and colourful, but a gift of humour in his forceful expressions robbed them of offence, as indeed did the friendly charm and interest he bestowed on all who knew him. One could always rely on him for an amusing story, carefully graded to the company in which he found himself, yet in his private life he was of a serious disposition, and technical reading, especially of articles on modern surgery, was perhaps his main occupation at home. He was a careful diagnostician, and many resident medical officers at the local hospital will have been edified by his practice in waving away X-ray films and reports until his thorough clinical examination of a surgical case had been concluded. Both Deal and the hospital service will miss the help of an experienced practitioner who combined the skills of general practice with the outlook of a highly qualified consultant surgeon.

Another friend recalls Alec Davies' talents as a writer and a reader:

He had the ability to make written words come alive, as though he were talking. He had wit and eloquence which, if disciplined, could have made him a notable writer, as he was a notable person. Once or twice—his language a little tempered—he published his current opinions on the National Health Service; and for some months he had been incubating what he called his second Bevan lecture on the subject. Though never one of those controversialists who go out of their way to do justice to the other side, he could always be relied on to say something wise, as well as something enjoyably wild. His pleasure in writing went with a love of books, and he was an ardent reader both of general and professional literature.

He died in Deal Hospital on April 8, at the age of 60, and leaves two daughters.

WILLIAM HALLIBURTON McMULLEN

O.B.E., M.B. Lond., F.R.C.S.

Mr. McMullen, consulting ophthalmic surgeon to Charing Cross Hospital, London, died on April 15 at the age of 81.

His father was a doctor in Camberwell, and he was educated at the City of London School and King's College. He qualified from King's College Hospital in 1898, and after holding house-appointments at King's he took the F.R.C.S. in 1901. After holding the posts of curator and pathologist at the Royal Westminster Ophthalmic Hospital (now part of Charing Cross Hospital) he was appointed assistant surgeon to that hospital. Later he also joined the staffs of the Miller General Hospital, The Hospital for Sick Children, Great Ormond Street, and the Royal Northern Hospital. During the 1914–18 war he was ophthalmic specialist to the Central London recruiting depot. After he retired from his hospital appointments he remained a helpful and valued member of the house committee of the Royal Westminster Ophthalmic Hospital.

He married in 1906 Miss Kate Higgins who survives him with three sons.

M. L. H., who was one of Mr. McMullen's clinical clerks, writes:

Even in 1912 he was white-haired and of distinguished appearance. He was a good teacher and extremely thorough in his approach to every case, even in a busy clinic. This opinion I was able to confirm when I followed him as ophthalmic surgeon at the Miller Hospital, and saw many of his old notes and cases. When, in 1934, I once again followed him, this time at Charing Cross Hospital, I was able to see how much his opinion on medical cases had been respected. It was largely through his inspiration and planning that we were able, in 1930, to open our present hospital in High Holborn, with its 100 beds in place of the 40 beds of the old hospital. Besides being a careful diagnostician he was a good and meticulous operator and very light-handed. Even in illness he preserved the calm and unruffled exterior which was so characteristic of him.

A memorial service will be held at 11 A.M. on Wednesday, May 7, at St. John's Wood Chapel, London, N.W.8.

PAUL OSWALD WOLFF

Dr. Med., Dr. Phil. Berlin

BEFORE he left Germany in the '30s, Professor Wolff had won a national reputation as a pharmacologist, as a university teacher, and as a medical editor. He used his years of exile to win an international reputation as an expert on the problems of drug addiction and as a sectional chief of the World Health Organisation.

He was born in 1894 in Berlin, the son of Geheim Sanitätsrat Dr. Alfred Wolff, and studied medicine in Göttingen, Freiburg, Greifswald, and Berlin. His career was interrupted by the war, in which he served in the German army and was disabled by gas; and he did not qualify till 1919. After taking his doctorates in medicine and in philosophy he joined the department of pharmacology in the University of Berlin, and became a Privat Dozent. In 1925 he joined the editorial staff of the *Deutsche Medizinische Wochenschrift* and in 1930 he became editor-in-chief. During these years he was also an adviser on drugs and drug addiction to the German Ministries for home affairs and for health and he was for some years secretary to the German Arzneimittel Komission. He took an important part in drafting the regulations for the use of opiates which were accepted at the meeting of German doctors held at Danzig in 1928 and which are still current practice in Germany today.

In 1933 Wolff emigrated to Switzerland where he became a regular contributor to the *Schweizerische Medizinische Wochenschrift*. He also wrote several reports on narcotics for the League of Nations. He was well fitted for this work by his mastery of English, Spanish, and French. In 1939 he was sent to the Argentine on a mission for the League of Nations and he remained there till 1948, continuing his work for the League and also acting as an adviser to the Argentine Government. In 1949 he returned to Geneva on his appointment as chief of the Addiction-producing Drugs Section of the World Health Organisation. After he retired in 1954 he continued to lecture and write on the control of narcotics and in 1956 he visited this country to speak at a meeting of the Society for the Study of Addiction (of which he was a vice-president). His paper on heroin from the international point of view was later published in our columns. Last year he was made an honorary professor of the Free University of Berlin.

A man of high intelligence, a scholar, and a collector of works of art, Wolff was also an engaging companion, of deprecating humour. Latterly frail, he made little concession to physical disability. He was, as a friend says, "a man who never gave up", and to the day of his death, in November of last year, he was busy on his study of synthetic narcotic drugs.

Diary of the Week

APRIL 27 to MAY 3

Monday, 28th

WRIGHT-FLEMING INSTITUTE OF MICROBIOLOGY, St. Mary's Hospital Medical School, W.2
5 P.M. Prof. C. L. Oakley: Sites of Production of Antibodies.

MANCHESTER MEDICAL SOCIETY
9 P.M. (University of Manchester) General Practice. Dr. R. W. Burslem: Some Obstetric Difficulties.

Tuesday, 29th

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.2
5 P.M. Dr. H. G. H. Richards: Thrombosis. (Erasmus Wilson demonstration.)

Wednesday, 30th

ROYAL COLLEGE OF SURGEONS OF ENGLAND
5 P.M. Dr. M. Jaupitre: Le Cinéma Endoscopique en Urologie, Technique, Indication, et Interêt.

INSTITUTE OF DERMATOLOGY, Lisle Street, W.C.2
5.30 P.M. Dr. R. W. Riddell: Laboratory Procedures for Mycotic Infections.

INSTITUTE OF DISEASES OF THE CHEST, Brompton, S.W.3
5 P.M. Dr. J. G. Scadding: Results of Antibacterial Treatment in Pulmonary Tuberculosis.

OXFORD UNIVERSITY
5 P.M. (Radcliffe Infirmary) Dr. Paul Weiss: Mechanism of Wound Healing. (Litchfield lecture.)

Thursday, May 1st

INSTITUTE OF LARYNGOLOGY AND OTOLOGY
5.30 P.M. (Royal College of Surgeons of England) Prof. W. D. M. Paton: Pharmacology of Mucous Membrane.

INSTITUTE OF PSYCHIATRY
5 P.M. (Maudsley Hospital, Denmark Hill, S.E.5) Prof. Delisle Burns (Montreal): Physiology of Amnesia.

ALFRED ADLER MEDICAL SOCIETY
8 P.M. (1, Wimpole Street, W.1) Prof. Alexander Kennedy: Psychology of Training and Competitive Sport.

NUFFIELD ORTHOPÆDIC CENTRE, Wingfield Morris Orthopædic Hospital, Oxford
8.30 P.M. Mr. R. G. Taylor: Use of Bone Grafts in Delayed and Non-union of Fractures.

UNIVERSITY OF BIRMINGHAM
4 P.M. Prof. E. C. Amoroso: Constitution of the Mammalian Placenta. (First Ingleby lecture.)

ROYAL MEDICO-PSYCHOLOGICAL ASSOCIATION
4.30 P.M. (Cheadle Royal Hospital, near Manchester) Psychotherapy and Social Psychiatry. Dr. G. C. Heller: Schisms in Psychotherapy.

UNIVERSITY OF DUBLIN
5 P.M. (Trinity College) Prof. A. Hagedoorn (Amsterdam), Gross and Minute Defects of the Germ Cells and Clinical Ophthalmology.

Friday, 2nd

ROYAL SOCIETY OF MEDICINE, 1, Wimpole Street, W.1
10.30 A.M. *Otology.* Dr. R. B. Lumsden, Mr. Spencer Harrison, Dr. Lionel Naftalin, Dr. G. MacDowall: Conservative Treatment of Ménière's Disease.
2.30 P.M. *Laryngology.* Mr. K. Greer Malcomson: Vasomotor Activities of the Nasal Mucous Membrane. Mr. A. J. Moffett: A Possible Relationship between the Sinuses and the Lymphoid Tissue of the Naso-pharynx.
5.30 P.M. *Anæsthetics.* Dr. Raymond Wise: Treatment of Barbiturate Poisoning. (Registrar's prize essay.)

ST. MARY'S HOSPITAL MEDICAL SCHOOL, Paddington, W.2
5 P.M. Mr. T. B. Fitzgerald: Contraction Ring Dystocia.

UNIVERSITY OF BIRMINGHAM
4 P.M. Professor Amoroso: The Functional Role of the Placenta. (Second of two Ingleby lectures.)

Appointments

FRANCIS, H. W. S., M.B. Cantab., D.P.H.: M.O. in charge of immunisation, Birmingham.
HORNER, J. S., M.B. Birm.: school M.O. and assistant M.O.H., Leicester.
JONES, KINGSLEY, L.R.C.P.I., D.P.M.: assistant psychiatrist, St. Andrew's Mental Hospital Group, Thorpe.
JOSEPH, SARAH N., M.B. Madras, D.OBST.: school M.O. and assistant M.O.H., Coventry.
KNOX, JOHN, M.B. Glasg., M.R.C.P.: consultant physician, North-eastern Regional geriatric service, Scotland.
MCFIE, JOHN, M.D. Cantab.: psychologist, National Hospital for Nervous Diseases, Queen Square, London.
MACKENZIE, MAVIS H., M.B. Lond.; school M.O. and assistant M.O.H., Leicester.

The Hospital for Sick Children, Great Ormond Street, London:

BROWN, K., M.B. Sydney, F.R.C.S.: house-surgeon to the orthopædic and plastic departments.
KOBLENZER, P. J., M.B. Lond.: assistant medical registrar.
VANIER, THERESE M., M.B. Cantab.: house-physician.

South Western Regional Hospital Board:

HEWITT, MARK, M.B. Lond., M.R.C.P.: part-time consultant venereologist, West Cornwall clinical area.
HUDSON, JOAN I., M.B. Cantab., D.P.M.: assistant psychiatrist, Horton Road and Coney Hill Hospitals, Gloucester.
SHEACH, JEAN M., M.D. Aberd., D.M.R.D.: consultant radiologist, Exeter clinical area.

West Riding of Yorkshire County Council:

BRISTER, ISOBEL K. E., M.B. Brist., D.OBST.: assistant M.O. and school M.O., Kirkburton, Denby Dale, Colne Valley, Meltham, Holmfirth, and Saddleworth.
CUSACK, NORA, M.B., N.U.I., D.C.H., D.P.H.: assistant M.O. and school M.O., Castleford.
FARRER, J. A., M.B. Melb.: senior assistant M.O. and school M.O., Bowland, Sedbergh, and Settle.
STALKER, ROBERT, M.B. Aberd.: assistant M.O. and school M.O., Spenborough and Mirfield.

Colonial Appointments:

BOOKLESS, D. W., M.B. Edin., D.P.H.: senior M.O., Fiji.
BROWN, J. D., M.B. Belf.: M.O., Kenya.
CARUANA, SALVINO, M.D., B.SC. Malta, D.T.M. & H., D.P.H.: senior M.O.H., Sierra Leone.
CRAWFORD, WILLIAM, M.B. Dubl., D.T.M.: M.O., Somaliland.
EGWUATU, S. O., M.B. N.U.I.: senior M.O., Eastern Nigeria.
FRASER, SIR JAMES, M.B. Edin., F.R.C.S.E.: surgeon, Sarawak.
GRAY, D. K., M.B. Lond.: M.O., Fiji.
IKPEME, P. J., L.M.S. Nigeria: senior M.O., Eastern Nigeria.
MOLLER, M. S. G., M.D.: senior M.O., health education, Tanganyika.
SEIFER, R., M.B.: M.O., Uganda.
SMITH, C. J. C., M.B. Edin., F.R.C.S.E.: surgeon, Sarawak.

Notes and News

MEDICAL RESEARCH COUNCIL

A GROUP for research on the chemical pathology of steroids is to be established in Sheffield, under the direction of Dr. J. K. Norymberski. The group will study steroids in relation to disordered metabolism in disease in general, not only in rheumatoid arthritis. The board of governors of the United Sheffield Hospitals, which is associated with the Council in establishing this group, is to provide accommodation at the Jessop Hospital for Women and to meet a third of the running costs; the board has received grants, of £4000 each, from the British Empire Cancer Campaign and the Sheffield and District Convalescent and Hospital Services Council, to meet capital costs.

The Council's obstetric medicine research unit, under the direction of Prof. Dugald Baird, is moving into new accommodation—an additional storey on the antenatal wing of the Aberdeen Maternity Hospital. The building costs are to be met by a grant of £60,000 from the Scottish Hospitals Endowment Research Trust, and the equipment and nurses will be provided by the North Eastern Regional Hospital Board (Scotland). There will be eight beds, besides laboratories and offices for the social research section, which should make possible intimate collaboration between clinicians and research workers. The work of the unit began during the late war with studies of perinatal mortality, which showed the significance of maternal nutrition; later studies showed the importance of the mother's physique, health, and social background. More information is sought on the social background of normal pregnancy, and on the biochemical changes during pregnancy (particularly in the sex hormones) and their relation to physiological efficiency in pregnancy and labour.

MINISTER'S REPLY TO SELECT COMMITTEE ON ESTIMATES

IN their report on the running costs of hospitals, the select committee on estimates made some pointed criticisms of the Ministry of Health, which have drawn an equally sharp reply from the Minister.[1] The committee said that it was clear to them that "if full value is to be obtained for the large sums of public money that are spent every year, there must be more time and attention devoted to long-term planning"; and they expressed depression at "the apparent lack of vigour with which some fundamental problems are being faced by the Ministry".

The Minister dissents from the suggestion of lack of vigour, and asserts the opposite. As evidence he cites matters specifically mentioned by the committee that have already been the subject of action. Thus the committee made recommendations about the appointment and assessment of salaries of hospital administrators; both these recommendations, says the Minister, have been made by Sir Noel Hall in a recent report, which is being considered. The committee recommend the fullest use of departmental costing; the Minister agrees, and has already informed hospital authorities of the importance he attaches to it. In the past, costing returns have been taken into account in deciding allocations for developments; in future the more accurate information from departmental costing will be used. The committee urge that medical students should be required to know about the financial structure of the health service and the cost of treatments. The Minister points out that the chief medical officer of the Ministry has at intervals provided information to medical schools about prescribing costs and asked them to include it in the curriculum; a committee is at present considering the factors in the cost of prescribing. There has been a considerable increase in joint contracting, which is recommended by the committee. The committee also called for an inquiry into the domiciliary consultative service, and for a relaxation of the definition of capital to finance small revenue-saving projects out of savings in running costs; the Minister will institute the inquiries and consider the redefinition.

1. Fourth Special Report from the Select Committee on Estimates. Session 1957–58. H.M. Stationery Office, 1958. Pp. 7. 6*d*.

TEN YEARS OF THE SLOUGH INDUSTRIAL HEALTH SERVICE

IN Slough many factories are concentrated in a small area, in and near the Trading Estate; thus it lends itself to the type of cooperative industrial health service that was set up there in 1947.[1] The latest annual report surveys the first ten years' running of the service.[2]

When the Slough Industrial Health Service began there were 52 member firms, with a total of 6324 employees; now there are 179 firms, with 17,748 employees. The care of all the 11,500 employees of member firms that have no medical department of their own costs about £2 a head yearly; half of this is accounted for by the casualty service, which treats over 500 patients a day, 98% of whom continue at work after treatment; only 0·8% of new patients attending the general clinics have to be referred to hospital. There are consultants (an orthopædic surgeon, a plastic surgeon in charge of the hand clinic, and a cardiologist), who hold regular clinics, besides several full-time doctors on the staff experienced in industrial medicine and dermatology. In addition to the central and two peripheral clinics, there is a mobile dressing-station which visits the more distant factories and prevents much loss of time. About 12% of the patients attending the general clinics have eye injuries.

The clinics are supported by X-ray, pathology, and physiotherapy departments, and there is a social-service worker. Patients who need intensive reablement are treated (as inpatients or outpatients) at Farnham Park centre, which also attracts patients from hospitals in London and elsewhere; its cost, previously shared by the Service and the Regional Hospital Board, is now borne entirely by the Board. Besides all its remedial work, the Service provides an occupational hygiene service, headed by a physician, an engineer, and a chemist, which is equipped with chemical and dust laboratories and a workshop. This service, controlled jointly with the London School of Hygiene and Tropical Medicine, advises on, and investigates, environmental conditions in the factories of member firms and occasionally others. Finally, many manufacturers require their workers to have initial or periodic examinations; and these, as well as annual examinations of senior executives of certain firms, are carried out by the staff of the Service.

RELEASE BINDINGS ON SKIS

THE ski accident prevention committee of the Ski Club of Great Britain has expressed concern at "the apathy and even antagonism" of some skiers towards the use of release bindings. The committee sought to investigate 180 ski-ing accidents on which claims were paid by one insurance company in 1956–57.

A questionary was sent to each of the 180 people concerned, of whom 148 replied. Of these 148, 59 had used some form of release binding. Of these 59, 27 sustained injuries unrelated to their release binding (e.g., collisions). Of the remaining 32, 15 admitted that their bindings had been improperly adjusted; in 10 further cases the release had operated and only a minor accident (e.g., sprain) resulted; and in only 2 of the other 7 cases were the skiers fully protected by both forward and rotational release bindings.

In no instance, says the committee, did the wearer of a release binding directly blame it in any way for the accident. The committee found that the proportion of skiers wearing release bindings rose steadily from 1·6% in first-season skiers to 54·5% in sixth-season skiers. "It is obvious that the more experienced skier realises the value of release bindings."

1. See *Lancet*, 1953, i, 1241.
2. The Slough Industrial Health Service, Ltd. Tenth Annual Report, 1956–57. Issued from the Community Centre, Farnham Road, Slough, Bucks.

CLOSURE OF HOSPITALS

WITH the passage of time, developments in medicine and changes in local circumstances will probably lead to more readjustments in the hospital service if the community is to be served efficiently and economically, and the Minister of Health does not wish to discourage hospital boards from closing hospitals or changing their use where this may seem desirable. He has, however, the responsibility of safeguarding as far as practicable the original objects of a hospital, and he has now sent a leaflet to hospital boards (H.M.[58]29) asking them to consult him before any change and describing the procedure to be followed.

University of Glasgow

On June 18 the honorary degree of LL.D. will be conferred on Dr. J. Cruickshank, formerly professor of bacteriology in the University of Aberdeen; Dr. T. F. Fox, editor of *The Lancet*; Dr. E. Husfeldt, professor of clinical surgery, University of Copenhagen; and Sir Hans Krebs, professor of biochemistry, University of Oxford.

Royal College of Surgeons of England

At a meeting of the council on April 17, with Sir James Paterson Ross, the president, in the chair, Mr. T. Keith Lyle was elected a member of the Court of Examiners. Prof. R. B. Kerr and Prof. E. J. Wayne were appointed Sir Arthur Sims Commonwealth travelling professors.

It was agreed to establish a Court of Anæsthesia in the College.

The following were elected fellows of the college without examination as being medical practitioners of 20 years' standing:

Prof. R. W. Scarff, Air Vice-Marshal John Conrad Neely, Mr. George Bell, Mr. G. H. Thomas, Prof. F. C. Wilkinson, Prof. A. E. Galloway.

The Jacksonian prize for 1957 was awarded to Mr. B. B. Milstein. The council selected the subject for the prize for 1959 non-specific granulomata of the alimentary tract. Mr. P. C. Williams and Dr. F. C. Chesterman were appointed Imperial Cancer Research Fund lecturers for 1958.

Diplomas of fellowship were granted to P. M. Marnie and M. F. Sturridge.

The following diplomas were granted, jointly with the Royal College of Physicians:

D.L.O.—A. D. Soysa.

D.O.—A. P. Barclay, B. J. Bowden, B. D. Coote, C. C. Ewing, T. P. Griffith, W. M. Higginbottom, Elizabeth D. Jamie, R. V. Kotnis, C. G. McEwen, I. A. Mackie, N. E. L. Margetson, I. A. Mir, G. A. I. Namsoo, Margaret C. W. Neilson, J. B. Parton, Than Pe, C. O. Quarcoopome, Dev Raj, T. V. Ranganathan, A. P. Sah, L. F. Shanahan, Froma Somerville, Peter Taylor, D. O. Tonkin, Ursula Walters.

D.T.M. & H.—A. J. Berman, T. K. Bose, J. K. Chakravarti, D. D. E. W. de Alwis, Ugo Fornari, M. C. Gupta, Maswoodul Haque, H. T. Heah, M. D. Heyman, F. N. C. Ho, M. H. Husaini, R. T. Jensen, P. V. Krishnamurti, Leif Langlo, G. R. L. Lyons, W. R. McKibben, P. D. Marsden, R. J. Onyango, E. S. Pillay, Nargis N. J. Rana, B. N. Roy, Louis Saint-Arnaud, M. Y. Siddiqui, J. P. Soonawalla, Subramaniam Thanikasalam, M. McC. Wilson, C. M. Wylie.

D. Phys. Med.—A. M. Bain, J. D. K. Palmer.

On Tuesday, May 6, at 5 P.M. at the college, Lincoln's Inn Fields, W.C.2, Dr. H. Rocke Robertson, professor of surgery in the University of British Columbia, will give the Moynihan lecture, on observations on wound infection.

Social Security Agreement between United Kingdom and France

A revised convention on social security between the United Kingdom and France will come into force on May 1.

The convention consolidates and replaces the provisions of the existing agreements. It covers benefits for sickness, maternity, industrial injury, old age, widowhood, and death; it extends French old-age allowances to United Kingdom nationals; and it ensures that medical benefits under the French insurance scheme, available under the earlier arrangements only to the families of United Kingdom nationals insured under that scheme, may now be extended to British retirement and industrial-injury pensioners and to persons receiving long-term sickness benefit.

Australian National University

Dr. F. C. Courtice has been appointed to the new chair of experimental pathology in the John Curtin School of Medical Research at Canberra.

Royal Anthropological Institute of Great Britain and Ireland

On Thursday, May 15, at 5.30 P.M. at the Institute, 21, Bedford Square, London, W.C.1, Dr. Raymond Cabannes, director of laboratories, Faculty of Medicine, Algiers, will lecture on the distribution of abnormal hæmoglobins in Algeria, Hoggar, and High Volta.

Problems of Old Age

Mr. Derek Walker-Smith, the Minister of Health, when he addressed the Conference of the National Old People's Welfare Council in London on April 17, discussed the pattern and underlying principle of what services for the old should be. He reiterated that the best place for old people was in their own homes, with help from the home services if need be, but he pointed out that, however successfully this principle was applied, the time must come when the struggle to maintain independence becomes too great a burden for many old people to sustain with any satisfaction to themselves. "The problem then arises," he added, "of knowing when this point is reached, just when the emphasis should be switched from helping people to stay independent, to encouraging them to feel that they might now find greater comfort and peace of mind in sharing life in a community with others in whom the means for self-reliance is running down." There was need for further investigation of these problems, and for that reason he welcomed the further grant offered by the Nuffield Foundation for a detailed factual study of the reasons why people enter homes for the old.

Surgeon Rear-Admiral W. R. S. Panckridge, R.N., has been appointed an honorary physician to the Queen in succession to Surgeon Rear-Admiral David Duncan.

Prof. R. B. Hunter has received a Purdue Frederick Medical Achievement Award. The award was announced by the International Council for Health and Travel.

On April 21 the Freedom of Wolverhampton was conferred on Dr. J. H. Sheldon, who has been a citizen of the borough for 37 years and is now senior physician at the Royal Hospital, Wolverhampton.

Dr. W. T. M. Gilbert has been appointed an official member of the executive council of St. Helena.

At a public meeting to be held by the London Marriage Guidance Council on Thursday, May 8, at 8 P.M., at County Hall, Westminster Bridge, S.E.1, Dr. Alfred Torrie will speak on the place of marriage counselling in the work of the family doctor.

The Association of Medical Records Officers will hold an educational conference and exhibition from May 14 to 17 at the Sun Pavilion, Harrogate. The speakers will include Dr. W. P. D. Logan, Dr. W. G. Daynes, Dr. J. E. Cates, Mr. A. W. Purdie, and Dr. C. A. Holman. Further particulars may be had from Mr. A. E. J. Turner, the secretary of the association, United Bristol Hospitals, Royal Infirmary, Bristol, 2.

This year for the first time the German Academic Exchange Service is offering a number of grants to young doctors who wish to visit German university institutes and clinics. The grants (425 DM a month) are tenable from Oct. 1, 1958, for twelve months or less. Further particulars may be had from the London branch of the service, 43, Parliament Street, S.W.1.

CORRIGENDA: *A Chair of Pædiatric Surgery.*—In last week's annotation (p. 839) we asserted that the new chair at the Institute of Child Health in the University of London was the second of its sort. A correspondent informs us that such chairs are not uncommon in the U.S.S.R.

Control of Treatment in Myxoedema by Electrocardiography.—In our issue of Jan. 18, there were two errors in doses in the article by Dr. P. C. Gibson. On p. 129 the dose in case 2 after 10 days should be gr. $4^1/_{33}$ not gr. $4^1/_{35}$; and on p. 130 the maintenance dose in case 10 should be gr. $1^1/_{33}$ not gr. $^1/_8$.

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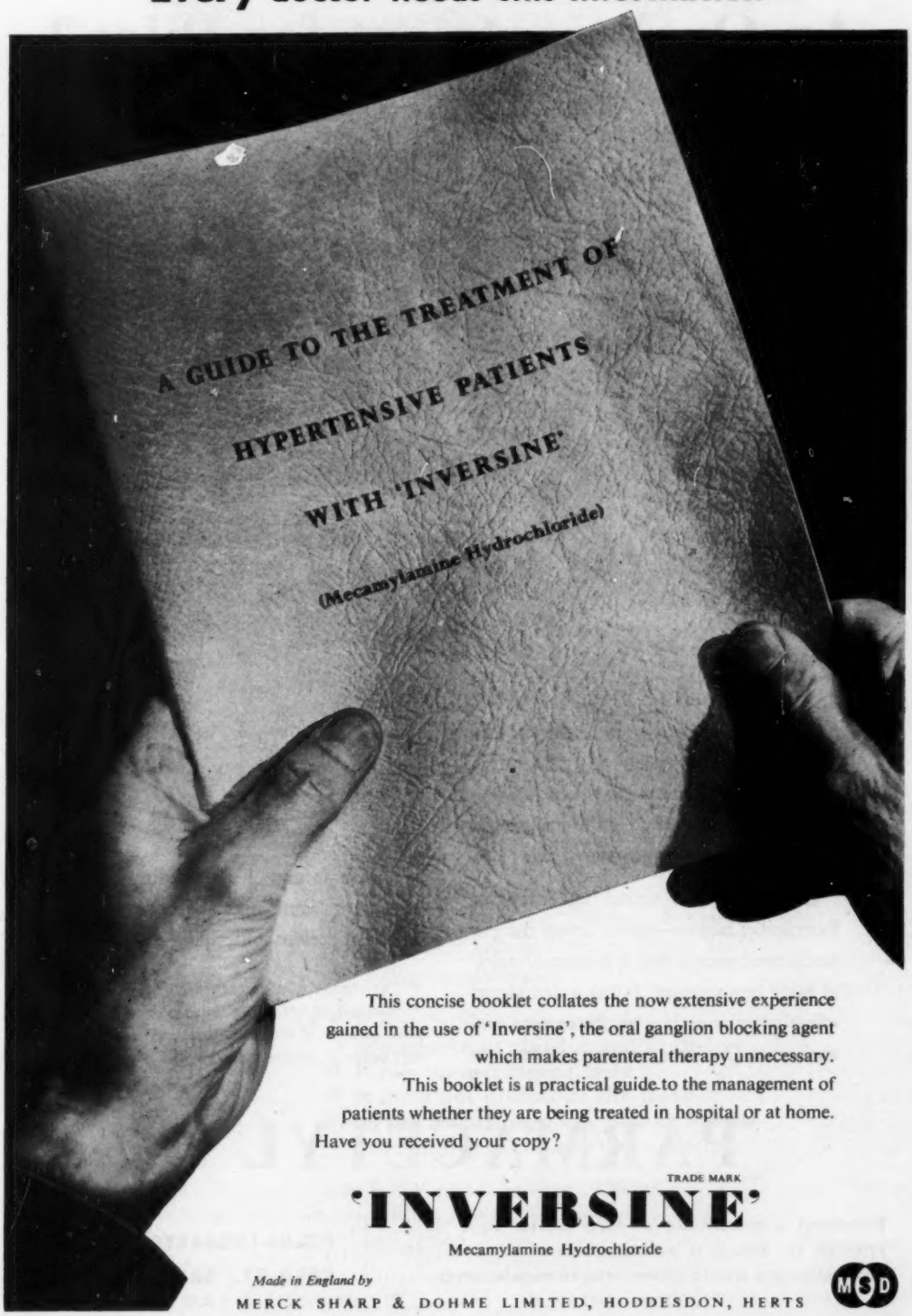

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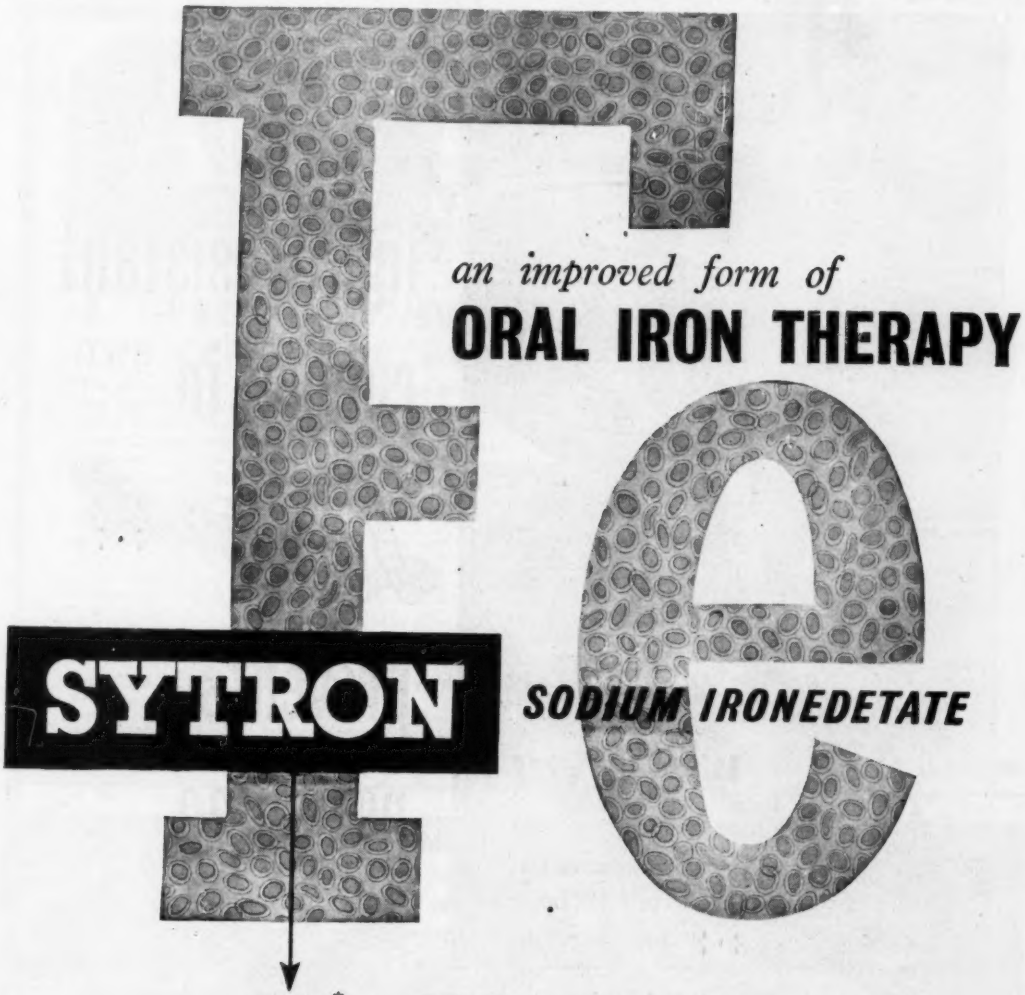

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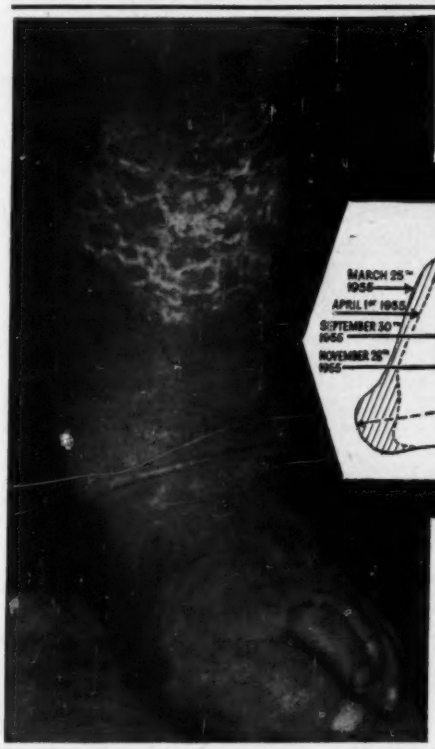

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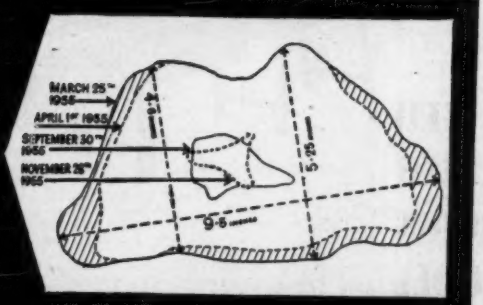

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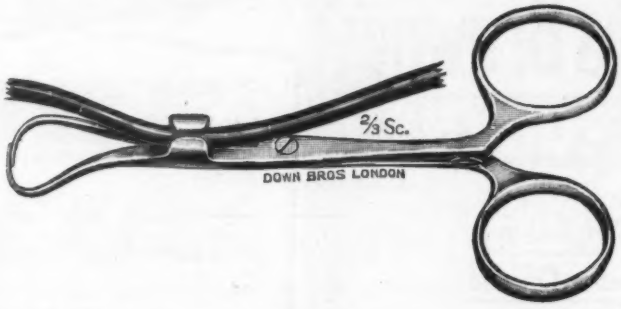

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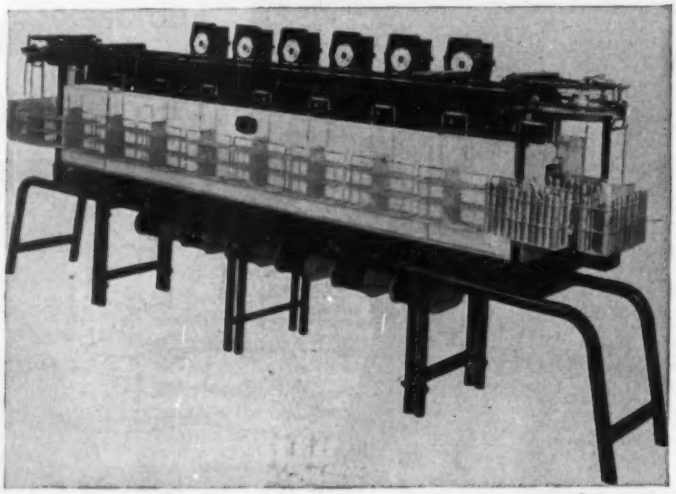

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The Terms and Conditions of Service of Hospital Medical and Dental Staff apply to all N.H.S. hospital posts we advertise, unless otherwise stated. Canvassing disqualifies, but candidates may normally visit the hospital by appointment.

Academic and Educational

ROYAL COLLEGE OF PHYSICIANS OF LONDON

CHARLES MURCHISON SCHOLARSHIP IN CLINICAL MEDICINE

The next Examination for the Scholarship will be held in London on THURSDAY, 10TH JULY, 1958.

The Examination is open to any student of medicine, whether holding a medical qualification or not, who, subsequently to the date of passing his professional Examination in Anatomy and Physiology for a medical qualification, commenced clinical studies not less than 2½ and not more than 5 years previously at a medical school in London, recognised by the Royal College of Physicians, or at the University of Edinburgh, including medical classes recognised by the Medical Faculty of the University.

The Scholarship is of the value of 20 guineas and is tenable for 1 year.

Intending candidates are required to send their names to the Registrar of the Royal College of Physicians, 12, Pall Mall East, London, S.W.1, not later than first post on Thursday, 19th June, 1958, with evidence of the duration of their medical studies from the Deans of their respective Schools and evidence of the date at which they passed their Examination in Anatomy and Physiology.

HAROLD BOLDERO, D.M., Registrar.

12, Pall Mall East, London, S.W.1.

ROYAL COLLEGE OF SURGEONS OF ENGLAND

COURSE IN CLINICAL SURGERY
AUGUST–OCTOBER, 1958

A 2-month full-time course in Clinical Surgery will be held from MONDAY, 25TH AUGUST, to SATURDAY, 18TH OCTOBER, 1958. The course will comprise 2 groups of students (15 in each) and the instruction will be given at approximately 40 hospitals in and around London with the emphasis on clinical material.

Closing date for applications Friday, 13th June, 1958.

Fee: 40 gns. plus 5 gns. for the 24 Surgery Lectures given at the College.

Further information of, and application forms for this course may be obtained from Mr. W. F. DAVIS, Deputy Secretary, Royal College of Surgeons, Lincoln's Inn-fields, London, W.C.2 (Telephone HOLborn 3474).

UNIVERSITY OF LONDON

BRITISH POSTGRADUATE MEDICAL FEDERATION
INSTITUTE OF NEUROLOGY
(Queen-square)

COURSE FOR CONSULTANTS

A 1-day course for Consultants in Medicine and Surgery will be held at The Institute of Neurology, National Hospital, Queen-square, London, W.C.1, on SATURDAY, 28TH JUNE, 1958, on "Aberrations of Consciousness".

The fee for the course will be £1 1s. (including coffee, lunch and tea).

Details can be obtained from The Dean, to whom application should be made as early as possible.

SOCIETY OF APOTHECARIES OF LONDON

DIPLOMA IN INDUSTRIAL HEALTH

The next Examination will begin on MONDAY, 14TH JULY, 1958. The following Examination will be held in DECEMBER, 1958.

For Regulations apply Registrar, Apothecaries' Hall, Black Friars-lane, London, E.C.4.

THE WRIGHT-FLEMING INSTITUTE OF MICROBIOLOGY

ST. MARY'S HOSPITAL MEDICAL SCHOOL, LONDON, W.2

The SECOND ALMROTH WRIGHT LECTURE will be given by Dr. DEBORAH DONIACH, M.D., Middlesex Hospital Medical School, in the lecture theatre of the above Institute on MONDAY, 5TH MAY. Subject: "Thyroid Auto-immunity and its Clinical Implications."

The lecture is open to all members of the medical profession and to all students in medical schools without fee.

NATIONAL HEART HOSPITAL

Westmoreland-street, W.1, and Buckingham

The ST. CYRES LECTURE for 1958 will be delivered in the Barnes Hall of the Royal Society of Medicine, 1, Wimpole-street, W.1, on WEDNESDAY, 4TH JUNE at 5 P.M., by Dr. HOWARD BURCHELL, of the Mayo Clinic, Minnesota, U.S.A.

Subject: "Studies of Pulmonary Hypertension in Congenital Heart Disease."

Members of the medical profession are cordially invited.

WESTERN INFIRMARY OF GLASGOW

COURSE OF INSTRUCTION FOR D.M.R.(T.)

Complete course of instruction for the Diploma in Medical Radiotherapy, granted by the Royal College of Physicians of London and the Royal College of Surgeons of England, will commence at the Western Infirmary, Glasgow, in October, 1958.

Application for admission should be made to the Medical Superintendent.

THE UNIVERSITY OF BIRMINGHAM

FACULTY OF MEDICINE

THE INGLEBY LECTURES, 1958

Professor E. C. AMOROSO, M.B., B.CH., PH.D., F.R.S. (Professor of Physiology, Royal Veterinary College, University of London), will deliver the Ingleby Lectures in the Large Anatomy Theatre of the Medical School on THURSDAY and FRIDAY, 1ST and 2ND MAY, 1958, at 4 P.M. each day.

Subjects:

1. "The Constitution of the Mammalian Placenta."
2. "The Functional Role of the Placenta."

Members of the medical profession and students of medicine are invited to attend.

April, 1958. A. P. THOMSON, Dean.

UNIVERSITY OF BRISTOL

A POSTGRADUATE COURSE in preparation for the Conjoint Diploma of Child Health will be held from OCTOBER to DECEMBER, 1958. (Provided that sufficient applications are received by 29th June.) Fee 20 guineas.

THE UNIVERSITY OF MANCHESTER

FACULTY OF MEDICINE

DIPLOMA IN DIAGNOSTIC RADIOLOGY. (R.C.P. AND S. ENG.)

A COURSE OF INSTRUCTION for the above Diploma will commence in MID-OCTOBER, 1958, and extend over a period of 2 years. The course is full-time, non-resident; inclusive fee £60.

Applications are invited from registered medical practitioners who fulfil the requirements as to previous medical experience laid down by the Examining Board in England (D.M.R.D.); regulations obtainable from the London Conjoint Board, 8–11, Queen-square, London, W.C.1.

Application should be made to the Dean of Postgraduate Medical Studies, the University of Manchester, not later than 19th May, 1958.

UNIVERSITY OF MANCHESTER

DIPLOMA IN MEDICAL RADIOTHERAPY (R.C.P. AND S. ENG.)

A COURSE OF INSTRUCTION IN RADIOTHERAPY, in training for the Diploma, will begin at the Christie Hospital and Holt Radium Institute, Manchester, on MONDAY, 6TH OCTOBER, 1958. This will continue until the end of JULY, 1959, after which students without previous experience recognised by the Joint Colleges must still spend a further 14 months working either in the Holt Radium Institute, or in the Radiotherapy Department of some other recognised Hospital. The course is full-time and non-resident. The inclusive fee is £60.

Applications are invited from registered medical practitioners who fulfil the requirements as to previous medical experience laid down by the Examining Board in England. (D.M.R.T. regulations obtainable from the London Conjoint Board, 8–11, Queen-square, London, W.C.1.)

Applicants from Great Britain may be eligible for Senior House Officer appointments. Special consideration will be given to candidates possessing a higher qualification in medicine or surgery, and Registrar appointments may be available for such candidates.

Further information may be obtained from Dr. RALSTON PATERSON, Director, Christie Hospital and Holt Radium Institute, Wilmslow-road, Manchester 20, or from the Dean of Postgraduate Medical Studies, the University, Manchester 13. Applications should be sent to Dr. RALSTON PATERSON not later than Monday, 9th June, 1958.

EMPIRE RHEUMATISM COUNCIL. Applications are invited for an EMPIRE RHEUMATISM COUNCIL FELLOWSHIP at a salary according to qualifications and experience, of up to £1500 p.a., renewable annually for a period of 3 years, to prosecute research in the field of rheumatism. Medical or scientific qualifications are needed.

Applications, stating age, qualifications and experience, together with details of proposed research, in triplicate, should be sent, with the names of 2 referees, to the General Secretary, Empire Rheumatism Council, Faraday House, 8/10, Charing Cross-road, London, W.C.2, before 31st May, 1958. Further information available on application to the above.

EMPIRE RHEUMATISM COUNCIL. Applications are invited for 2 TRAVELLING FELLOWSHIPS tenable for up to 1 year, to prosecute research on some aspect of the Rheumatic Diseases. Medical or scientific qualifications are required. Salary according to qualifications and experience, but not less than £1000 p.a. (for lesser period than 1 year, pro rata).

Applications, stating age, qualifications and experience, should be sent in triplicate, with the names of 2 referees, not later than 31st May, 1958, to the Acting General Secretary, Empire Rheumatism Council, Faraday House, 8/10, Charing Cross-road, London, W.C.2.

WORLD HEALTH ORGANIZATION FELLOWSHIPS. A small number of Fellowships is to be awarded in 1959 by the World Health Organization to registered medical practitioners, dental practitioners, and State-registered nurses of at least 5 years' standing who are engaged in the health services, medical education, or medical research in the United Kingdom.

Fellowships will be of 2 kinds :—

(1) RESIDENT FELLOWSHIPS for a period which will not exceed 6 months.

(2) TRAVELLING FELLOWSHIPS of shorter duration for senior persons holding responsible appointments.

Applications, giving full particulars of qualifications, experience, proposed programme, and duration of study, and accompanied by the names of 2 referees, should be sent :—

(*a*) By those resident in Scotland to the Secretary, Department of Health for Scotland, St. Andrew's House, Edinburgh, 1.

(*b*) By those resident in Northern Ireland to the Secretary, Ministry of Health and Local Government, Stormont, Belfast; and

(*c*) By others to the Secretary, Ministry of Health, Savile-row, London, W.1.

Envelopes should be marked "World Health Organization Fellowships." Applications must be received on or before 3rd June, 1958.

KING'S COLLEGE, NEWCASTLE UPON TYNE, UNIVERSITY OF DURHAM and the UNITED NEWCASTLE UPON TYNE HOSPITALS. The Council of King's College invite applications for the post of FIRST ASSISTANT in Neurology in the Department of Medicine. The appointment will be for 1 year in the first instance renewable annually to a maximum of not more than 3 years. The salary will be within the range £1400–£1900 p.a., plus child allowance. The successful applicant will hold his appointment jointly in King's College and in the United Newcastle upon Tyne Hospitals.

Further particulars may be obtained from the undersigned, to whom applications (15 copies), together with the names of 3 referees, should be sent not later than 12th May, 1958.

G. R. HANSON, Registrar of King's College.

UNIVERSITY OF LEEDS. UNITED LEEDS HOSPITALS. Applications are invited for the post of SENIOR REGISTRAR AND TUTOR IN ORTHOPÆDICS.

Applications (3 copies), stating date of birth, qualifications and details of present and previous appointments, with dates, and experience of teaching, together with the names of 3 referees, should reach the Registrar, The University, Leeds, 2 (from whom further particulars may be obtained), not later than 19th May, 1958.

UNIVERSITY OF ST. ANDREWS. Queen's College, DUNDEE. DEPARTMENT OF PHARMACOLOGY AND THERAPEUTICS. Applications are invited for the post of RESEARCH ASSISTANT IN ENDOCRINOLOGY, commencing 1st October, 1958. Salary scale, £620–£25 p.a.–£760 ; placing according to qualifications.

Apply, giving names of 3 referees, not later than 17th May, 1958, to Joint Clerk to the University Court, Queen's College, Dundee.

UNIVERSITY OF GLASGOW/WESTERN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of UNIVERSITY LECTURESHIP IN MATERIA MEDICA combined with a clinical post in the wards, in charge of the Professor, at Stobhill Hospital, Glasgow. The total salary attached to the post will be made up of half the salary on the appropriate University scale for clinical lecturers and half the salary on the National Health Service scale appropriate to a Consultant.

Applications (16 copies), stating date of birth, qualifications, experience, present appointment, and the names of 3 referees, to reach the Secretary, Western Regional Hospital Board, 64, West Regent-street, Glasgow, C.2, not later than 30 days after the publication of this advertisement.

UNIVERSITY OF OTAGO and MEDICAL RESEARCH COUNCIL OF NEW ZEALAND. Applications are invited from medical practitioners for the posts of SENIOR MEDICAL RESEARCH OFFICER and of MEDICAL RESEARCH OFFICER. The successful applicants will be attached to the Department of Medicine, Otago University, New Zealand, and will, if desired, have the opportunity of clinical work in the Dunedin Hospital. The clinical and experimental facilities are adequate and further details of the post, including transportation allowances, can be obtained from the Secretary, Association of Universities of the British Commonwealth, 36, Gordon-square, London, W.C.1. The salary for a Senior Medical Research Officer is now £1640 rising to £1940 at which point there is a promotion bar. The salary for a Medical Research Officer is £910 rising to £1540 at which point salary increases depend upon promotion to rank of Senior Medical Research Officer. £ sterling is equivalent to £NZ. The initial salary depends on the qualifications and experience of the applicant.

Applicants should state their age, nationality, qualifications and clinical or other experience, and a photograph should be sent. The names of 2 referees should be given. Applications should be sent by air mail to Professor F. H. SMIRK, Chairman of the Clinical Medicine Research Committee, Medical School, Dunedin, New Zealand, on or before 10th May, 1958.

THE UNIVERSITY OF MANITOBA. Applications are invited for the CHAIR OF BIOCHEMISTRY in the Faculty of Medicine. Minimum qualifications: M.D. with special training in Biochemistry, or Ph.D. in Biochemistry. Teaching and research experience essential. Salary in the range of $10,000, depending on qualifications and experience.

Address applications or enquiries to L. G. BELL, M.D., Dean, Faculty of Medicine, The University of Manitoba, Emily and Bannatyne, Winnipeg 3, Manitoba, Canada.

STATE UNIVERSITY OF IOWA. A Fellowship Program to start 1ST JULY, 1958, for training in the broad area of handicapped children is being sponsored by the Hospital School for Severely Handicapped Children and the Child Development Clinic of the Department of Pediatrics at the State University of Iowa in Iowa City, U.S.A. The Hospital School has a residential program for 60 severely physically handicapped children considered to be educable and also conducts an outpatient program. All types of physical handicaps are considered, but especially cerebral palsy. The Child Development Clinic is concerned about all aspects of deviant development in children, especially mental retardation. It has both inpatient and outpatient functions. Both the Hospital School and the Child Development Clinic operate in conjunction with the Department of Pediatrics. Duties would be directed towards being intimately concerned with the children in the inpatient groups and also helping with outpatient evaluations. Ample opportunity would be provided to do investigative work in this area, the exact nature of which would be directed by the person's interests. Attending certain national or regional meetings and attending certain postgraduate courses would be a part of the fellowship program. Applicants should have completed basic pædiatric training. An appointment of Instructor in the Department of Pediatrics will be offered. The salary will be $4000–$5000, depending on qualifications.

Applications can be made to Dr. ROBERT B. KUGEL, Department of Pediatrics.

University Hospitals, Iowa City, Iowa.

Hospital Services: Senior Appointments

NATIONAL HOSPITALS FOR NERVOUS DISEASES. The Board of Governors invites applications for the whole-time appointment of PATHOLOGIST (Consultant status) at The National Hospital, Queen-square, London, W.C.1. The vacancy arises from the upgrading of the Senior Hospital Medical Officer post in the Histological Laboratory. The holder will be a candidate for the higher position.

Applications (40 copies), giving the names of 3 referees, must be submitted to the undersigned not later than 23rd May, 1958.

H. EWART MITCHELL, Secretary to the Board of Governors.

The National Hospitals for Nervous Diseases,
Queen-square, London, W.C.1.

LONDON HOSPITAL, Whitechapel, E.1. Applications are invited for the post of Part-time CONSULTANT OBSTETRIC AND GYNÆCOLOGICAL SURGEON to the Hospital. The appointment becomes vacant on 1st October, 1958. A higher qualification in surgery is essential. The successful candidate will be required to attend on 5 half-days weekly.

Applications (12 copies), giving the names and addresses of 3 referees, should be received by the undersigned by 19th May, 1958.

H. BRIERLEY, House Governor.

NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD.

1. CONSULTANT SURGEON, 2 half-days a week, Finchley Memorial Hospital, Granville-road, North Finchley, N.12 (76 Beds). Post vacant 30th September, 1958.

Applications before 27th May, 1958.

2. CONSULTANT E.N.T. SURGEON, 2 half-days a week, Mount Vernon Hospital, Northwood (551 Beds). The Hospital is a regional centre for radiotherapy, and special experience of malignant diseases of the ear, nose, and throat is desirable.

Applications before 29th May, 1958.

3. CONSULTANT OBSTETRICIAN AND GYNÆCOLOGIST, 2 half-days a week, Royal London Homœopathic Hospital, Great Ormond-street, W.C.1 (183 Beds).

Applications before 30th May, 1958.

Hospitals may be visited by direct appointment.

Application forms obtainable from and returnable to Secretary, North West Metropolitan Regional Hospital Board, 11A, Portland-place, W.1.

ST. MARY'S HOSPITAL, W.2. Part-time Consultant in Obstetrics and Gynæcology. Applications invited from members of the Royal College of Obstetricians and Gynæcologists and Fellows of a Royal College of Surgeons or Masters of Surgery. Successful candidate required to undertake up to 6 notional half-days per week, from 1st October, 1958. The Gynæcological Department is at the Samaritan Hospital, Marylebone-road, and the Obstetric Department is at St. Mary's Hospital.

Applications (12 copies), giving full details, together with names and addresses of 3 referees, should be sent not later than 14th June, 1958, to the House Governor, St. Mary's Hospital, London, W.2.

DARTFORD, KENT. STONE HOUSE HOSPITAL FOR NERVOUS AND MENTAL DISORDERS. DARENTH AND STONE HOSPITAL MANAGEMENT COMMITTEE. Locum Tenens SENIOR HOSPITAL MEDICAL OFFICER required for above Hospital. Locum for 6 months with possible extension to 1 year, commencing approximately middle of May. Applicant should have considerable experience of physical methods of treatment, including insulin shock therapy. Outpatient work included in duties.

Applications to the Physician-Superintendent.

LEEDS REGIONAL HOSPITAL BOARD.

CONSULTANT in Pathology, Hull A and B Groups (whole-time or maximum part-time). The person appointed will be responsible for the bulk of the hæmatological and serological work in the Groups and will be based at the Kingston General Hospital. Residence in the Hull area essential.

CONSULTANT in General Surgery (8 notional half-days per week), Scarborough, Bridlington, Malton and Whitby Group. Duties mainly at Scarborough Hospital (20 hours per week). 1 session weekly at Whitby War Memorial Hospital. Residence in Scarborough area essential.

CONSULTANT in Orthopædic Surgery (maximum part-time), Scarborough, Bridlington, Malton and Whitby Group. Duties mainly at Scarborough Hospital (12 hours per week). 1 session weekly at Lloyd Hospital, Bridlington. Fortnightly sessions at Malton and Whitby. 9 hours per week to be devoted to Adela Shaw Orthopædic Hospital and associated clinics in the North Riding area. Residence in Scarborough area essential.

Applications (12 copies), stating age, qualifications and details of present and previous appointments with dates, and names and addresses of 3 referees, to the Secretary, Park-parade, Harrogate, by 20th May, 1958.

LEEDS REGIONAL HOSPITAL BOARD. Whole-time Locum ASSISTANT PSYCHIATRIST (Senior Hospital Medical Officer scale) for duties at Broadgate Hospital, Beverley. Applicants should hold the D.P.M. or other equivalent qualifications. The post is now vacant and appointment will be for a minimum of 3 months. Accommodation is available for a single person.

Applications, stating age, qualifications and details of appointments held showing dates, with names and addresses of 3 referees, to the Secretary, Park-parade, Harrogate, by 3rd May, 1958.

LINGFIELD HOSPITAL SCHOOL FOR EPILEPTIC CHILDREN. Applications are invited for the post of DEPUTY MEDICAL SUPERINTENDENT to commence duties in the Autumn. Neurological or pædiatric experience desirable. Mainly medical but some administrative duties. Salary according to the scale for Senior Hospital Medical Officers. A house is available at a nominal rent for a married man. Superannuable under F.S.S.N.

Applications, stating age, marital status, full particulars of qualifications and experience and names of 2 referees, to be sent to the Medical Superintendent, Lingfield Hospital School, Lingfield, Surrey.

MANCHESTER. UNITED MANCHESTER HOSPITALS AND MANCHESTER REGIONAL HOSPITAL BOARD. CONSULTANT CARDIOLOGIST (9 sessions). Duties will include the development and supervision of a Pædiatric Cardiac Diagnostic Unit at St. Mary's Hospital, in collaboration with the University Department of Child Health (3 sessions) ; consultant duties in the University Department of Cardiology, Manchester Royal Infirmary (4 sessions) ; and in Regional Board Hospitals in Manchester (2 sessions). Candidates must possess a higher qualification in medicine.

Applications (12 copies) should be sent to the undersigned not later than 17th May, 1958, with the names of 3 referees.

F. J. CABLE, Secretary to the Board of Governors.

United Manchester Hospitals, Oxford-road, Manchester, 13.

GUILDFORD. ROYAL SURREY COUNTY HOSPITAL. LOCUM TENENS required for Consultant Orthopædic Surgeon for 9 sessions per week from 1st to 31st May. Includes Accident Department.

Applications, stating qualifications, age and experience, to the Hospital Secretary as soon as possible.

NEWCASTLE REGIONAL HOSPITAL BOARD. CONSULTANT PSYCHIATRIST, whole-time, for the Department of Psychological Medicine, Newcastle General Hospital. The Department is associated with the University Department of Psychological Medicine and is under the general direction of the Professor of Psychiatry. It is the principal teaching and research unit in the Region. It contains a modern inpatient unit of 54 Beds, an active outpatient section, and a unit for child psychiatry. The successful candidate will be expected to participate in post-graduate teaching and may be given appropriate university status. He will be required to reside within 5 miles of the Newcastle General Hospital, north of the River Tyne. Further particulars from Regional Psychiatrist.

Applications, with names and addresses of 3 referees, to Regional Psychiatrist, Regional Hospital Board, Benfield-road, Newcastle upon Tyne, 6, within 28 days.

SCOTLAND. NORTHERN REGIONAL HOSPITAL BOARD. Applications are invited for a Whole-time post of SENIOR HOSPITAL MEDICAL OFFICER in Anæsthetics at the Stornoway Hospitals. Duties are mainly at the Lewis Hospital, where a rented house is available for the officer.

Schedules of application and further particulars are obtainable from the undersigned, with whom applications should be lodged by 9th May, 1958.

A. M. FRASER, M.D.,
Secretary and Administrative Medical Officer.
Office of the Northern Regional Hospital Board,
Reay House, 17, Old Edinburgh-road, Inverness.

SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD. Applications are invited for the following appointments:

CONSULTANT PHYSICIAN at the Royal Infirmary, Glasgow. The appointment is part-time on the basis of 7 notional half-days per week.

Whole-time SENIOR HOSPITAL MEDICAL OFFICER in General Surgery for duties at Hairmyres Hospital, East Kilbride, Lanarkshire, and at Ballochmyle Hospital, Mauchline, Ayrshire. Experience in urology would be an advantage. Salary (at age 32 and over) on the scale £1653 15s.–£52 10s.–£2126 5s.

Applications (16 copies), stating date of birth, qualifications, experience, present appointment, and the names of 3 referees, to reach the Secretary, Western Regional Hospital Board, 64, West Regent-street, Glasgow, C.2, not later than 30 days after the publication of this advertisement.

WELSH REGIONAL HOSPITAL BOARD. Whole-time Locum Tenens CONSULTANT RADIOLOGIST required Merthyr and Aberdare Hospital Management Committee area immediately.

Applications, naming 2 referees, to Senior Administrative Medical Officer, Temple of Peace, Cathays Park, Cardiff.

AUSTRALIA. THE ROYAL MELBOURNE HOSPITAL invites applications from legally qualified medical practitioners for appointment to the honorary office of PHYSICIAN to outpatients. This appointment carries full membership of the medical staff, and is for a period of 5 years, but the appointee will be eligible for reappointment at the end of that period.

Applications, on the prescribed form obtainable from the undersigned, close on 23rd May, 1958. Further details are obtainable from the Medical Superintendent.

AFTON MORCOM, Manager.

MELBOURNE. ST. VINCENT'S HOSPITAL. University OF MELBOURNE. Applications are invited for the position of DIRECTOR of the Clinical Biochemical Laboratories of St. Vincent's Hospital, Melbourne.

Qualifications: Medical graduate with extensive training in clinical biochemistry and expert knowledge of biochemical investigation in the problems of general medicine.

Salary: £3000 Australian with increments of £100 to £3500 Australian. Limited private practice within the Department may be allowed.

Superannuation is available. Reasonable travelling expenses will be allowed for successful applicant.

Applicants should furnish details of their nationality, age, marital status, experience and published work. 2 testimonials should be submitted and the names of 3 referees who may be consulted.

Further information may be obtained from the Chief Executive Officer and Secretary, St. Vincent's Hospital, Victoria Parade, Melbourne, N.6, Victoria, Australia.

E. W. R. GRACE, Chief Executive Officer and Secretary.

NEW ZEALAND. THE OTAGO HOSPITAL BOARD. DEPARTMENT OF OBSTETRICS AND GYNÆCOLOGY, DUNEDIN HOSPITAL, NEW ZEALAND. Applications are invited for the position of SENIOR VISITING OBSTETRICIAN AND GYNÆCOLOGIST, Dunedin Hospital, New Zealand. Applicants must hold a higher qualification in obstetrics and gynæcology with corresponding postgraduate experience. The salary payable in accordance with the Hospital Employment (Medical Officers) Regulations is £775 p.a., and subject to appointment by the University of Otago there will be a further remuneration as a Tutor in Obstetrics. The hours of duty of the appointee will be from 7 to 10½ hours per week, and private practice will be permitted. Conditions of appointment for the position may be obtained from THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2, or the office of the High Commissioner for New Zealand, 415, The Strand, London.

Applications, on the application form attached to the conditions of appointment, stating age, qualifications and experience, together with copies of recent testimonials and health and radiological certificates, will be received by the undersigned until 10 o'clock A.M. on Monday, 2nd June, 1958.

W. A. WILLIAMSON, Secretary, Otago Hospital Board.
P.O. Box 946, Dunedin, New Zealand.

Hospital Services: Junior Appointments

BETHNAL GREEN HOSPITAL, Cambridge Heath-road, E.2. HOUSE PHYSICIAN, pre-registration post, vacancy 7th May, 1958.

Applications, stating experience, and copies of 2 testimonials, to Hospital Secretary.

BROMPTON HOSPITAL, S.W.3. Applications are invited for the post of Part-time RADIOLOGICAL REGISTRAR for attendance up to 4 sessions weekly, for 1 year in the first instance. Candidates are required to hold a Diploma in Diagnostic Radiology.

Applications, stating age, qualifications with dates, nationality and appointments held, accompanied by copies of 3 testimonials, by 3rd May to KENNETH A. F. MILES, House Governor.

BROMPTON HOSPITAL, S.W.3. Applications invited for post of SENIOR REGISTRAR (whole-time) to the Cardiac Department from those who have completed at least the third year of their general medical training as a Senior Registrar. One who has completed or will shortly be completing the fourth year is preferred. Applicants from the Commonwealth of Senior Registrar status are eligible provided they intend to return abroad on completion of training. Appointment is for 1 year with eligibility for reappointment.

Applications, stating age, qualifications with dates, nationality and appointments held, together with copies of 3 testimonials, by 3rd May, 1958, to KENNETH A. F. MILES, House Governor.

CHARING CROSS HOSPITAL GROUP. Applications are invited for the following pre-registration appointments tenable for 6 months from 1st July, 1958:—

(*a*) **Harrow Hospital**
2 HOUSE SURGEONS.
1 HOUSE PHYSICIAN.
(*b*) **Wembley Hospital**
3 HOUSE SURGEONS.
1 HOUSE PHYSICIAN.

Salary in accordance with the terms and conditions of service of hospital medical staff and subject to deduction for board-residence.

Application forms to be returned to the undersigned by 19th May, 1958. FRANK HART, Secretary to the Board.

CITY OF LONDON MATERNITY HOSPITAL, Hanley-road, London, N.4. OBSTETRIC HOUSE SURGEONS (2). Both posts recognised for D.Obst.R.C.O.G. and M.R.C.O.G. Vacant 21st May and 7th June.

Application forms obtainable from Hospital Secretary, returnable by 2nd May, 1958.

GROVE PARK HOSPITAL, Lee, London, S.E.12. LEWISHAM GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of SENIOR HOUSE OFFICER at the above Hospital for pulmonary tuberculosis and other chest diseases. The appointment is vacant immediately and tenable for 1 year. Salary £819 10s. p.a., less £150 for emoluments if resident.

Applications, stating age, qualifications and experience, with copy testimonials or names of referees, to the Group Secretary, at Lewisham Hospital, S.E.13.

KING EDWARD MEMORIAL HOSPITAL, Ealing. House OFFICER in Gynæcology at above Hospital. Vacant 21st May, 1958. Pre-registration surgical post. Preference given to persons seeking second pre-registration post under the Medical Act, 1950. If services satisfactory will subsequently be considered for recognised obstetric post at Perivale Maternity Hospital, Greenford.

Applications, stating age, nationality, qualifications and experience, with copies of 2 recent testimonials, to Group Secretary, South West Middlesex Hospital Management Committee, West Middlesex Hospital, Isleworth, by 6th May, 1958.

HAMMERSMITH HOSPITAL AND INSTITUTE OF OBSTETRICS AND GYNÆCOLOGY, Ducane-road, London, W.12. Applications invited from registered medical practitioners for the following resident posts:—

HOUSE SURGEON (gynæcology), 1st July.
HOUSE SURGEON (obstetrics), 1st August.
Both posts recognised for M.R.C.O.G.

Detailed applications, names 2 referees, to Secretary, Board of Governors, the Hammersmith, West London, and St. Mark's Hospitals, Ducane-road, London, W.12, by 10th May.

HAMMERSMITH HOSPITAL AND INSTITUTE OF OBSTETRICS AND GYNÆCOLOGY, AND NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Joint appointment. Whole-time REGISTRAR in Obstetrics and Gynæcology required 1st July, 1958. Appointment tenable for minimum period of 2 years, of which the first year will be spent at the Luton Maternity Hospital and Luton and Dunstable Hospital, Luton (resident), and the second year at the Hammersmith Hospital and Institute of Obstetrics and Gynæcology (non-resident).

Application forms obtainable from and returnable to the Group Secretary, Luton and Hitchin Group Hospital Management Committee, St. Mary's Hospital, Luton, Beds.

HAMMERSMITH HOSPITAL AND POSTGRADUATE MEDICAL SCHOOL, Ducane-road, London, W.12. 2 Whole-time NON-RESIDENT SENIOR HOUSE OFFICERS required 1st October. These posts are for trainees in diagnostic radiology and are normally tenable for 1 year with a possibility of a second year. Higher medical or surgical qualifications would be an advantage.

Detailed applications, names 2 referees, to Secretary, Board of Governors, The Hammersmith, West London, and St. Mark's Hospitals, Ducane-road, London, W.12, by 10th May.

HACKNEY HOSPITAL, London, E.9. (General—857 Beds.) Applications are invited for appointment as SENIOR HOUSE OFFICER (casualty). Vacant 10th June. The department is supervised by the Orthopædic Surgeon and the post can rotate with that of Senior House Officer (orthopædics).

Apply Group Secretary, above address, by 10th May, quoting HH/SHO.

HACKNEY HOSPITAL, London, E.9. (General—857 Beds.) Applications are invited for appointment as SENIOR HOUSE OFFICER (orthopædics). Vacant 10th June. The Senior House Officer works directly under the Consultant in a unit of 36 Beds; the post offers excellent experience, and is recognised for the F.R.C.S.

Apply Group Secretary, above address, by 10th May, 1958.

LAMBETH HOSPITAL, Brook-drive, S.E.11. South West METROPOLITAN REGIONAL HOSPITAL BOARD. ANÆSTHETIC REGISTRAR required. Appointment is for 2 years, subject to review after 12 months. Vacant July, 1958. Recognised for D.A. and F.F.A. R.C.S. Candidates may visit the Hospital by appointment if they so desire.

Application forms from the Secretary, Lambeth Group Hospital Management Committee, Renfrew-road, S.E.11, to whom completed forms should be returned not later than 3rd May, 1958.

LAMBETH HOSPITAL, Kennington, S.E.11. Applications are invited from pre-registration and registered medical practitioners for the position of RESIDENT HOUSE SURGEON vacant 5th June, 1958. Hospital recognised for F.R.C.S. Successful candidate will be required to carry out a fortnight's locum duty starting 22nd May, 1958.

Application forms from the Hospital Secretary.

LONDON CHEST HOSPITAL. Hospitals for Diseases of THE CHEST. A vacancy occurs 1st June, 1958, for REGISTRAR in Clinical Pathology (Registrar grade). The appointment (resident) is a whole-time one and will be for 1 year in the first instance.

Applications, stating date of birth, qualifications with dates, and previous experience, together with copies of 3 testimonials, should reach the undersigned not later than 3rd May.

J. ROBBINS, House Governor.

London Chest Hospital, E.2.

LONDON CHEST HOSPITAL. Hospitals for Diseases of THE CHEST. 2 vacancies (1 resident, 1 non-resident) occur 1st June, 1958, for HOUSE PHYSICIAN. Appointment for 6 months, 4 in London, 2 at the Country Branch, near Letchworth, and post graded as House Officer. Duties include work in the Outpatient Department and special clinics as well as in wards. The resident post will be attached to the cardiological firm during the 4 months in London.

Applications, stating date of birth, qualifications with dates, and previous appointments held, with copies of 3 testimonials, should reach the undersigned not later than 3rd May.

J. ROBBINS, House Governor.

London Chest Hospital, E.2.

LONDON CHEST HOSPITAL. Hospitals for Diseases of THE CHEST. A vacancy occurs 1st July, 1958, for REGISTRAR in Clinical Pathology (Registrar grade). The appointment (non-resident) is a whole-time one and will be for 1 year in the first instance.

Applications, stating date of birth, qualifications with dates, and previous experience, together with copies of 3 testimonials, should reach the undersigned not later than 6th May (quoting reference N.R.). J. ROBBINS, House Governor.

London Chest Hospital, E.2.

LONDON CHEST HOSPITAL (Country Branch). HosPITALS FOR DISEASES OF THE CHEST. REGISTRAR in Clinical Pathology (Registrar grade). A vacancy occurs at the Country Branch, near Letchworth. The appointment is a whole-time one and will be for 1 year in the first instance, and the holder may be resident or non-resident.

Applications, stating age, qualifications with dates, and previous experience, together with copies of 3 testimonials, should be forwarded at once to J. ROBBINS, House Governor, London Chest Hospital, E.2.

LONDON HOSPITAL, Whitechapel, E.1, and THE NORTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for the post of SENIOR REGISTRAR in General Surgery becoming vacant on 1st July, 1958. A higher qualification in surgery is required. The appointment will be for 1 year, renewable for a maximum of 4. The first 2 years will be spent at The London Hospital, the third at the Southend General Hospital and the fourth at one of the above by arrangement or in a special department.

Applications (12 copies), giving the names and addresses of 3 referees, should be received by the undersigned by 14th May, 1958. H. BRIERLEY, House Governor.

LONDON JEWISH HOSPITAL, Stepney Green, E.1. (130 Beds.) SENIOR HOUSE OFFICER (Surgical Department) required (resident). Post recognised for F.R.C.S.

Applications, stating age, qualifications and experience, together with copies of testimonials, to be sent to the Hospital Secretary.

MARIE CURIE HOSPITAL, 66, Fitzjohn's-avenue, Hampstead, N.W.3. HAREFIELD AND NORTHWOOD GROUP HOSPITAL MANAGEMENT COMMITTEE. RESIDENT MEDICAL OFFICER (House Officer grade) required.

Applications, with copies of testimonials, to the Administrative Officer by 3rd May, 1958.

MEMORIAL HOSPITAL, Shooters Hill, S.E.18. Senior HOUSE OFFICER (anæsthetics), vacant 4th May. The post provides good experience and is recognised for F.F.A. R.C.S and D.A. 6 months' resident appointment and may then be renewed.

Apply to Group Secretary, Memorial Hospital, Woolwich, S.E.18.

MILE END HOSPITAL, Bancroft-road, London, E.1. (479 Beds.) HOUSE PHYSICIAN (pre- or post-registration). Post vacant 10th May, 1958.

Application forms, obtainable from Physician-Superintendent, to be returned by 2nd May, 1958, with copies of not more than 3 testimonials.

NELSON HOSPITAL, Kingston-road, Merton, S.W.20. (123 Beds.) HOUSE SURGEON (resident). Approved for pre-registration service. Post vacant 1st May.

Applications, stating age, qualifications, &c., and the names and addresses of 2 referees, to the Secretary at above address.

NATIONAL HOSPITALS FOR NERVOUS DISEASES. Applications are invited from registered medical practitioners for the appointment of REGISTRAR (non-resident) at The National Hospital, Queen-square, W.C.1, for duty in the Outpatient Department and the Department of Applied Electro-Physiology. This post carries the grade of Registrar. The appointment will be for 1 year in the first instance.

Applications, with names of 3 referees, to be sent to the undersigned not later than 30th April, 1958.

H. EWART MITCHELL, Secretary to the Board of Governors.

The National Hospitals for Nervous Diseases,
Queen-square, London, W.C.1.

NORTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD.

REGISTRAR in Pathology (non-resident), Forest Group of hospitals, E.17. Hæmatology and biochemistry experience desirable.

REGISTRAR in Pathology (resident), General Hospital, Rochford, Essex. Recognised for Diploma in Pathology. Post in Group Laboratories but duties mainly at the Hospital.

REGISTRAR in Orthopædics, E.N.T., and Emergency General Surgery. St. Andrew's Hospital, E.3.

CASUALTY AND ORTHOPÆDIC REGISTRAR (resident or non-resident), Essex County Hospital, Colchester, Essex. Recognised for F.R.C.S.

ORTHOPÆDIC REGISTRAR (non-resident), Whipps Cross Hospital, E.11.

GERIATRIC REGISTRAR (resident), Langthorne Hospital, E.11. Post offers excellent scope in modern Geriatrics.

Appointments subject to review after 1 year.

Application forms from Secretary, 11A, Portland-place, W.1, to be returned by 10th May.

NORTH MIDDLESEX HOSPITAL, London, N.18. House PHYSICIAN (resident), post-registration, required for 1st June, for 6 months. General medicine.

Applications, stating age, nationality, qualifications, experience, with copies of recent testimonials, to Secretary of Hospital, by 30th April.

NORTH MIDDLESEX HOSPITAL, London, N.18. House SURGEON (pre- or post-registration), resident, required for 1st June, for 6 months. Duties mainly general surgery, with some E.N.T. surgery. Post recognised for F.R.C.S.

Applications, stating age, nationality, qualifications, experience, with copies of recent testimonials, to Secretary of Hospital by 30th April.

PADDINGTON GREEN CHILDREN'S HOSPITAL, W.2. (St. Mary's Hospital.) Applications are invited for the posts of :—

(*a*) HOUSE PHYSICIAN.
(*b*) HOUSE SURGEON.

Pre-registration posts, vacant 1st June, 1958. Tenable for 6 months.

Applications, stating age, nationality, qualifications with dates, and experience, with copies of 3 recent testimonials, should reach the Secretary not later than Saturday, 3rd May, 1958.

PLAISTOW MATERNITY HOSPITAL, Howards-road, Plaistow, London, E.13. RESIDENT OBSTETRIC OFFICER (House Officer, post-registration) required for 6 months commencing as soon as possible. This post offers excellent experience as sole resident in charge of 64 Beds.

Apply to Hospital Secretary not later than 3rd May, 1958, enclosing copies of 2 testimonials.

QUEEN ELIZABETH HOSPITAL FOR CHILDREN, Hackney-road, E.2; Shadwell, E.1; BANSTEAD, SURREY. 3 HOUSE OFFICER appointments.

(i) for 2 consecutive periods of 6 months, commencing 1st June, 1958, first period House Physician, Hackney-road, second period House Surgeon, Hackney-road (2 months) and Casualty Officer, Shadwell (4 months).

(ii) for 2 consecutive periods of 6 months, commencing 1st June, 1958, first period House Physician, Shadwell, second period House Surgeon, Banstead (3 months) and Casualty Officer, Hackney-road (3 months).

(iii) for 6 months, commencing 1st July, 1958, at Hackney-road, 2 months as House Surgeon and 4 months as Casualty Officer.

Application forms may be obtained from the Secretary at Hackney-road and should be returned, with copies of not more than 3 testimonials, not later than 3rd May, 1958.

ROYAL NORTHERN HOSPITAL, Holloway, N.7. Applications are invited for 2 posts of HOUSE SURGEON, vacant 4th and 16th June, 1958, respectively. Preference given to pre-registration candidates. Recognised for F.R.C.S.

Applications, with copies of testimonials, to be sent to the Hospital Secretary by 7th May, 1958.

ROYAL FREE HOSPITAL, W.C.1. Applications are invited for the following posts :—

(*a*) 6 months HOUSE OFFICER, Infectious Diseases Department, followed by 6 months PÆDIATRIC HOUSE PHYSICIAN.

(*b*) 6 months PÆDIATRIC HOUSE PHYSICIAN, followed by 6 months HOUSE OFFICER, Infectious Diseases Department.

The posts are full-time, resident and are recognised pre-registration posts. Duties to commence on 1st July, 1958. Salary and conditions of service in accordance with those laid down by the Ministry of Health.

Application forms may be obtained from the Secretary, Royal Free Hospital, Gray's Inn-road, W.C.1, to whom they should be returned not later than 5th May, 1958.

ROYAL FREE HOSPITAL, W.C.1. Applications are invited from registered medical practitioners for the post of SENIOR CASUALTY OFFICER at the Royal Free Hospital, Gray's Inn-road, W.C.1. The appointment is full-time, resident, for 6 months' duties to commence on 1st July, 1958. Salary and conditions of service in accordance with those laid down by the Ministry of Health for Senior House Officers.

Application forms may be obtained from the Secretary, Royal Free Hospital, Gray's Inn-road, W.C.1, to whom they should be returned not later than 5th May, 1958.

ROYAL FREE HOSPITAL, W.C.1. Applications are invited from registered medical practitioners for the post of RESIDENT ASSISTANT PATHOLOGIST (Senior House Officer). The post is for 1 year from 1st July, 1958. Salary and conditions of service as laid down by the Ministry of Health.

Application forms may be obtained from the Secretary, Royal Free Hospital, Gray's Inn-road, W.C.1, to whom they should be returned not later than 5th May, 1958.

ROYAL FREE HOSPITAL, W.C.1. Applications are invited for the post of RESIDENT MEDICAL OFFICER to work at the Lawn Road Branch of the Royal Free Hospital. Terms and conditions of service in accordance with the Junior Hospital Medical Officer scale. The appointment is for 1 year in the first instance, to commence on 1st July, 1958.

Application forms may be obtained from the Secretary, Royal Free Hospital, Gray's Inn-road, W.C.1, to whom they should be returned not later than 5th May, 1958.

ROYAL FREE HOSPITAL, W.C.1. Applications are invited for the post of RESIDENT MEDICAL OFFICER at the Royal Free Hospital. Terms and conditions of service in accordance with the Junior Hospital Medical Officer scale. The appointment is for 1 year in the first instance and commences on 1st July, 1958.

Application forms may be obtained from the Secretary, Royal Free Hospital, Gray's Inn-road, W.C.1, to whom they should be returned not later than 5th May, 1958.

SOUTH EAST METROPOLITAN HOSPITAL BOARD. Applications are invited for a Whole-time appointment as RESIDENT SURGICAL OFFICER to fill a vacancy in the approved establishment at the Greenwich and Deptford Group of hospitals, for duties mainly at the Miller General Hospital, Greenwich High-road, London, S.E.10. The salary will be £1061 10s. p.a., and the appointment will be in accordance with the terms and conditions of service of hospital medical and dental staff (England and Wales) and will be for 1 year in the first instance, renewable for a further year.

Applications, giving particulars of age, qualifications and experience, with relevant dates, together with the names and addresses of 2 referees, to be sent to the Secretary, Registrars Committee, South East Metropolitan Regional Hospital Board, 11, Portland-place, London, W.1, not later than 10th May, 1958.

ST. ANN'S GENERAL HOSPITAL, N.15. Applications are invited for the appointment of RESIDENT HOUSE PHYSICIAN (Senior House Officer) to above Hospital for duty in the Infectious Diseases Unit and other general duties, for a period of 6 months from 22nd May, 1958.

Application form from Secretary, Tottenham Group Hospital Management Committee, The Green, N.15, to be returned by 3rd May, 1958.

ST. CHARLES' HOSPITAL, Ladbroke-grove, W.10. (576 Beds.) Applications are invited for the post of Whole-time RESIDENT REGISTRAR (surgical) for Major Thoracic Surgical Unit. Experience in general surgery essential and higher surgical qualification an advantage. Hospital may be visited by direct appointment.

Application forms obtainable from and returnable to Secretary to Committee, Paddington Group Hospital Management Committee, Harrow-road, W.9, by 12th May.

ST. GEORGE'S HOSPITAL, S.W.1. Applications are invited for the post of Locum REGISTRAR to the Diagnostic X-ray Department of the St. George's Hospital Group. This appointment will be for 5 months from 1st June to 30th October, 1958. Candidates should possess a Diploma in Radiology. This is a whole-time appointment and is non-resident.

Applications, stating age, education, qualifications and experience, together with the names and addresses of 2 referees, should reach the undersigned not later than 10th May, 1958.

P. H. CONSTABLE, House Governor.

ST. GILES' HOSPITAL, Camberwell, S.E.5. House SURGEON (casualty duties, with some general surgery, E.N.T., and eye beds). Recognised pre-registration post. Post-registration candidates considered.

Apply, giving personal details and names of referees or copy testimonials, to Group Secretary, Camberwell Hospital Management Committee, Dulwich Hospital, East Dulwich-grove, S.E.22.

ST. JAMES' HOSPITAL, Balham, London, S.W.12. HOUSE PHYSICIAN required 19th May.

Applications, stating age, qualifications, experience, and names of 2 referees, to Group Secretary, Wandsworth Hospital Group, at above address by 3rd May.

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, Lisle-street, Leicester-square, London, W.C.2. Applications are invited for the appointment of Whole-time SENIOR REGISTRAR. Candidates should have special experience in Dermatology and possession of a higher qualification is desirable.

Applications addressed to the Secretary to the Board, stating age, qualifications and experience, with names of 3 referees, should be received by 6th May, 1958.

ST. LEONARD'S HOSPITAL, Nuttall-street, London, N.1. Applications are invited for the post of CASUALTY OFFICER (Senior House Officer) for 1 year.

Write, with 2 recent testimonials, to the Hospital Secretary by 9th May, 1958.

ST. STEPHEN'S HOSPITAL, Fulham-road, Chelsea, S.W.10. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. REGISTRAR, non-resident, general and thoracic medicine (including cardiology and tuberculosis).

Application forms from Group Secretary, St. Luke's Hospital, Sydney-street, Chelsea, S.W.3, to be returned within 14 days of date of advertisement (enclose foolscap stamped addressed envelope).

ST. STEPHEN'S HOSPITAL, Chelsea, S.W.10. House SURGEON (obstetrics and gynæcology). Second post, resident. Vacancy late May. Post recognised for D.Obst.R.C.O.G.

Applications, naming 2 referees, to Medical Superintendent within 14 days.

ST. STEPHEN'S HOSPITAL, Chelsea, S.W.10. House PHYSICIAN (pre-registration). Resident, vacancy approximately 31st May, 1958.

Applications, naming 2 referees, to Medical Superintendent within 14 days.

ST. MARY'S HOSPITAL, Paddington, W.2. Senior REGISTRAR to the Neurological Department at St. Mary's Hospital. Higher qualification essential. The appointment will be for a first period of 12 months, as from a date to be arranged.

Applications, giving full details, with names and addresses of 3 referees, should reach the House Governor not later than 12th May, 1958.

ST. MARY'S HOSPITAL, Paddington, W.2. Senior REGISTRAR to the Orthopædic Department at St. Mary's Hospital. Higher qualification essential. The appointment will be for a first period of 12 months, from 1st June, 1958.

Applications, giving full details, with names and addresses of 3 referees, should reach the House Governor not later than 5th May, 1958.

ST. THOMAS'S HOSPITAL, London, S.E.1. Senior REGISTRAR to the X-ray Diagnostic Department. Whole-time for a period of 1 year in the first instance.

Applications, naming 2 referees, to the Clerk of the Governors by 9th May, 1958.

THE HOSPITAL FOR SICK CHILDREN, Great Ormond-street, London, W.C.1. There will be a vacancy on 3rd July, 1958, for a RESIDENT E.N.T. REGISTRAR (Registrar grade).

Further particulars and form of application, which must be returned not later than 12th May, 1958, may be obtained from the undersigned.

H. F. RUTHERFORD, House Govenor and Secretary.

THE HOSPITAL FOR SICK CHILDREN, Great Ormond-street, London, W.C.1. There will be vacancies on 15th July, 1958, for the following Senior House Officers:—

2 HOUSE PHYSICIANS.
2 HOUSE SURGEONS.

Further particulars and forms of application, which must be returned not later than 12th May, 1958, may be obtained from the undersigned.

H. F. RUTHERFORD, House Governor and Secretary.

THE HOSPITAL FOR SICK CHILDREN, Great Ormond-street, London, W.C.1. There will be a vacancy on 22nd July, 1958, for a JUNIOR ANÆSTHETICS REGISTRAR (Senior House Officer grade).

Further particulars and form of application, which must be returned not later than 12th May, 1958, may be obtained from the undersigned.

H. F. RUTHERFORD, House Governor and Secretary.

THE HOSPITAL FOR SICK CHILDREN, Great Ormond-street, London, W.C.1, and NORTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for the post of REGISTRAR in Psychological Medicine, held jointly between the 2 above authorities, which will be vacant in September, 1958. The successful candidate will be required to attend The Hospital for Sick Children on 5 and the Woodberry Down Child Guidance Clinic on 4 sessions per week.

Further particulars and form of application, which must be returned by 19th May, 1958, may be obtained from the undersigned.

H. F. RUTHERFORD, House Governor and Secretary, The Hospital for Sick Children.

WEST END HOSPITAL FOR NEUROLOGY AND NEUROSURGERY, 91, Dean-street, London, W.1. Applications are invited for the post of NEUROSURGICAL REGISTRAR. The duties of the post will be arranged to provide opportunity for study and experience in neurology as well as in neurosurgery.

Application forms obtainable from and returnable to Secretary, Paddington Group Hospital Management Committee, Paddington General Hospital, Harrow-road, W.9, by 8th May, 1958.

WHIPPS CROSS HOSPITAL, London, E.11. Applications are invited for the post of HOUSE SURGEON in the Orthopædic Department (post- or pre-registration). This post, which is recognised for the F.R.C.S., is vacant now.

Application forms from the Hospital Secretary, to be returned within 10 days of the appearance of this advertisement.

WHITTINGTON HOSPITAL, London, N.19. Senior HOUSE OFFICER (casualty). Vacant now. Non-resident post.

Application forms obtainable from Group Secretary, 46, Cholmeley-park, London, N.6 (ARChway 3070, extension 527), and returnable to the Medical Superintendent, Whittington Hospital, London, N.19, by 5th May, 1958.

ASHTON, HYDE AND GLOSSOP HOSPITAL MANAGE-MENT COMMITTEE. 2 HOUSE SURGEONS required at Ashton-under-Lyne General Hospital. Preference will be given to pre-registration applicants. Recognised for F.R.C.S.(Eng.). Vacant May.

Applications, with copies of 2 testimonials, to Group Secretary, General Hospital, Ashton-under-Lyne.

ASHTON, HYDE AND GLOSSOP HOSPITAL MANAGE-MENT COMMITTEE. JUNIOR HOSPITAL MEDICAL OFFICER (resident) required for Casualty Department, Ashton-under-Lyne General Hospital. Appointment limited to 4 years. Minimum commencing salary £852 10s. p.a. but higher salary may be paid according to experience and qualifications. There may be some orthopædic duties to be undertaken by the holder of this post. Recognised under F.R.C.S. regulations.

Apply, giving age, experience, qualifications and 2 references, to Group Secretary, General Hospital, Ashton-under-Lyne.

ASHFORD HOSPITAL, Ashford, Middlesex. (560 Beds.) STAINES GROUP HOSPITAL MANAGEMENT COMMITTEE. Required, RESIDENT HOUSE SURGEON for general surgical duties. Post vacant 27th May, 1958. 6 months' appointment, suitable for pre-registration candidates.

Applications, stating age, qualifications and experience, with copies of up to 3 recent testimonials, to Medical Director of Hospital.

ASHFORD HOSPITAL, Ashford, Middlesex. (560 Beds.) STAINES GROUP HOSPITAL MANAGEMENT COMMITTEE. Required, RESIDENT HOUSE SURGEONS (2) for Traumatic and Orthopædic Unit. Posts vacant now. 6-month appointments, suitable for pre-registration candidates.

Applications, stating age, qualifications and experience, with copies of up to 3 recent testimonials, to Medical Director of Hospital.

ASHFORD HOSPITAL, Ashford, Middlesex. (560 Beds.) STAINES GROUP HOSPITAL MANAGEMENT COMMITTEE. Required, RESIDENT HOUSE OFFICER for general surgical and medical duties. 6 months' appointment, not suitable for pre-registration candidates.

Applications, stating age, qualifications and experience, with copies of up to 3 recent testimonials, to Medical Director of Hospital, immediately.

BARNSTAPLE. NORTH DEVON INFIRMARY. (105 Beds.) SENIOR HOUSE OFFICER required, whose duties will be mainly casualty. The post is tenable for 1 year, and will be vacant in early June. Small furnished flat available.

Applications to Group Secretary, North Devon Hospital Management Committee, 19, Alexandra-road, Barnstaple.

BARROW-IN-FURNESS. NORTH LONSDALE HOSPITAL. Applications are invited for the resident post of HOUSE OFFICER (surgical) (approved for pre-registration) at the North Lonsdale Hospital, Barrow-in-Furness. Post available immediately. Recognised for F.R.C.S.

Applications to the Group Secretary, Barrow and Furness Hospital Management Committee, 105, Abbey-road, Barrow-in-Furness.

BATLEY. THE GENERAL HOSPITAL. (99 Beds.) RESIDENT SENIOR HOUSE OFFICER (ophthalmology and E.N.T.). This appointment is recognised for the Diploma in Ophthalmology and, in addition to work at the above Hospital, the person appointed will be required to carry out certain clinical duties at other hospitals in the Group. The post will be vacant early in May, 1958.

Applications should be sent forthwith to the Administrative Officer, The General Hospital, Carlinghow, Hill, Batley, Yorks.

BEBINGTON, WIRRAL, CHESHIRE. CLATTERBRIDGE HOSPITAL. CENTRAL WIRRAL GROUP. Applications are invited for the post of JUNIOR HOSPITAL MEDICAL OFFICER (Casualty/Orthopædics) (resident). Salary in accordance with current terms and conditions of service, i.e., £852 10s.–£55–£1182 10s. p.a., less £170 p.a. for residential facilities.

Application forms, obtainable from the Secretary, should be returned within 10 days of the appearance of this advertisement.

BIRMINGHAM (near). MIDLAND CENTRE FOR NEUROSURGERY, Holly-lane, SMETHWICK, near BIRMINGHAM. RESIDENT SENIOR HOUSE OFFICERS, vacant in July. Recognised for period of 6 months' unspecified training under R.C.S. regulations. This is a new hospital, entirely devoted to neurology and neurosurgery, within easy reach of Birmingham. Salary on national scale less deduction for board, lodging, &c.

Applications, with names of 2 referees, to the Group Secretary, West Bromwich and District Hospitals Management Committee.

BIRMINGHAM REGIONAL HOSPITAL BOARD.
Birmingham (Selly Oak) Group, Oak Tree-lane, Birmingham, 29

(1) REGISTRAR (radiology). Selly Oak Hospital (1055 Beds) with associated maternity, eye, E.N.T., and infectious diseases hospitals. All forms of radiodiagnostic work undertaken. Hospital recognised for Part II D.M.R.D. Diploma in radiology desirable but consideration given to holders of Part I only.

Wolverhampton Group. The Royal Hospital, Wolverhampton

(2) RESIDENT SURGICAL REGISTRAR required. Duties in Royal Hospital and New Cross Hospital.

Application forms from Group Secretaries, to be returned by 5th May, 1958.

BIRMINGHAM (SANATORIA) GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of JUNIOR HOSPITAL MEDICAL OFFICER at West Heath Hospital, Rednal-road, Birmingham, 31. (207 Beds for the treatment of tuberculous and non-tuberculous chest cases.) The successful applicant will reside at the above Hospital (accommodation for single person only), and will be offered facilities for undertaking duties at the Birmingham Chest Clinic, Great Charles-street, Birmingham, 3.

Applications, stating age, qualifications, training and experience, together with copies of 3 recent testimonials, should be addressed to the Group Secretary, Birmingham (Sanatoria) Group Hospital Management Committee, Yardley Green Hospital, Birmingham, 9.

BIRMINGHAM. THE UNITED BIRMINGHAM HOSPITALS. Applications are invited for the post of MEDICAL REGISTRAR (resident or non-resident) for duties at the General Hospital. M.R.C.P. essential. This post offers exceptional opportunities for clinical experience and research. In the case of married applicants, housing accommodation outside the Hospital may be available. The successful candidate will be expected to take his turn in reception duty which is arranged on a rota system.

Application forms may be obtained from the Secretary, United Birmingham Hospitals, Queen Elizabeth Hospital, Birmingham, 15, and should be returned to him as soon as possible.

BOURNEMOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. HOUSE PHYSICIANS (pre-registration) required for Poole General Hospital on 23rd May, 1958, and for Poole General and Alderney Hospitals on 19th May, 1958.

Applications to the Hospital Secretary.

BOURNEMOUTH (near). CHRISTCHURCH HOSPITAL, CHRISTCHURCH, HAMPSHIRE. (334 Beds.) BOURNEMOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. HOUSE SURGEON (pre-registration interne) required for post becoming vacant on 26th June, 1958.

Applications to the Hospital Secretary.

BISHOP'S STORTFORD, HERTFORDSHIRE. HERTS AND ESSEX GENERAL HOSPITAL. Applications invited for post of HOUSE OFFICER (surgical) (pre-registration). Salary £467 10s.–£522 10s. p.a. less £125 for residential emoluments. Appointment to commence immediately.

Applications, stating age, nationality, qualifications and experience with copies of 2 recent testimonials or names of referees, to Hospital Secretary.

BLACKBURN AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE.

Royal Infirmary, Blackburn (262 general beds)

JUNIOR HOSPITAL MEDICAL OFFICER or SENIOR HOUSE OFFICER (casualty and orthopædics) required 26th May, 1958. Junior Hospital Medical Officer post can be for any period up to 4 years. Recognised for F.R.C.S.

Queen's Park Hospital, Blackburn

HOUSE PHYSICIAN required immediately. Post recognised for pre-registration purposes.

Applications to Group Secretary, Hospital Management Committee Office, Royal Infirmary, Blackburn.

BOLTON AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. RESIDENT ANÆSTHETIST (Senior House Officer grade). Main duties at Bolton Royal Infirmary and Bolton District General Hospital. Vacant 15th May, tenable for 12 months and recognised for the D.A. and F.F.A. R.C.S.

Applications, stating age, nationality, qualifications, experience and the names of 2 referees, to Group Secretary, The Royal Infirmary, Bolton.

BRADFORD ROYAL INFIRMARY. (507 Beds.) House SURGEONS required for the post of General Surgery and General Surgery/Urology. Both posts recognised for F.R.C.S. and pre-registration purposes. Vacant 1st May, 1958.

Applications, stating age, qualifications, experience and nationality, with copy testimonials, to Secretary.

BRADFORD. ST. LUKE'S HOSPITAL. (724 Beds.) HOUSE SURGEON (general surgery/plastic) required for 1st May, 1958. Recognised for F.R.C.S. and pre-registration purposes.

Applications, stating age, qualifications, experience, and nationality, with copy testimonials, to Secretary, Bradford Royal Infirmary.

BRADFORD. ST. LUKE'S HOSPITAL. (724 Beds.) House PHYSICIAN (pædiatrics) required for 1st May, 1958. Recognised for pre-registration purposes.

Applications, stating age, qualifications, experience and nationality, with copy testimonials, to Secretary, Bradford Royal Infirmary.

BRIGHTON GENERAL HOSPITAL. Brighton and LEWES HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER for General Surgical Unit (60 Beds). Vacant 25th May, 1958. Recognised for F.R.C.S. and offers considerable scope for operative surgery. Salary in accordance with national scale.

Applications, stating age, qualifications and experience, and giving the names of 2 referees, should be sent to the Physician-Superintendent, Brighton General Hospital, Elm-grove, Brighton, 7.

BROXBURN, WEST LOTHIAN. BANGOUR GENERAL HOSPITAL. (15 miles from Edinburgh.) Locum SENIOR HOUSE OFFICER required immediately for the Maxillo-Facial and Plastic Surgical Unit of Bangour General Hospital. The Hospital is a large general hospital with the following Departments: General Surgery, Plastic Surgery, Neurosurgery, E.N.T., Oral Surgery, Ophthalmology, Maternity, General Medicine, Pneumoconiosis, Tuberculosis and Chest. Salary and conditions of service in accordance with regulations.

Application should be made to the Group Secretary and Treasurer, Board of Management, Bangour General Hospital, Broxburn, West Lothian.

BURY ST. EDMUNDS. WEST SUFFOLK GENERAL HOSPITAL. (262 Beds.)

(*a*) SENIOR HOUSE OFFICER or HOUSE OFFICER (orthopædic and casualty duties); post recognised for F.R.C.S. (surgical); vacant late April.

(*b*) HOUSE PHYSICIAN (pædiatric and general medical duties); vacant late May.

(*c*) HOUSE PHYSICIAN (general medical duties); vacant early June.

(*d*) HOUSE SURGEON (general surgical duties), recognised for F.R.C.S. (surgical); vacant late June.

(*e*) HOUSE SURGEON (general surgical and other duties); vacant late May.

(*f*) HOUSE SURGEON (obstetric and gynæcological duties), recognised for D.Obst.R.C.O.G., vacant early July.

Except Senior House Officer, all posts recognised for pre-registration purposes.

Applications, with testimonials or names of referees, to Hospital Secretary.

BURY AND ROSSENDALE HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the resident post of SENIOR HOUSE OFFICER (pathology). Post vacant mid-May.

Apply, stating age, qualifications, experience, nationality, and names of 2 referees, to H. WILKINSON, Group Secretary, Bury General Hospital, Bury, Lancs.

BURTON-ON-TRENT. GENERAL HOSPITAL. Junior HOSPITAL MEDICAL OFFICER (anæsthetist) required. Recognised for D.A.

Applications to Group Secretary.

BURTON-ON-TRENT GENERAL HOSPITAL. Locum JUNIOR HOSPITAL MEDICAL OFFICER (Casualty Officer) required. Resident or non-resident.

Apply Group Secretary.

BURTON-ON-TRENT. THE GENERAL HOSPITAL. HOUSE OFFICER (orthopædics) (pre-registration post) required at the above Hospital. Recognised for F.R.C.S.

Applications to Group Secretary as soon as possible.

BURTON-ON-TRENT. THE GENERAL HOSPITAL. JUNIOR HOSPITAL MEDICAL OFFICER (casualty and orthopædics), resident or non-resident, required at the above Hospital. Furnished or unfurnished flat available for married applicant.

Applications to Group Secretary as soon as possible.

CANTERBURY. KENT AND CANTERBURY HOSPITAL. (277 Beds.) The post of GENERAL SURGICAL AND UROLOGICAL HOUSE SURGEON (pre-registration or third post), which is recognised for the F.R.C.S., is now vacant. National Health Service salary and conditions.

Applications, together with copies of 2 recent testimonials, to be addressed to the Hospital Secretary at the above Hospital.

CANTERBURY. KENT AND CANTERBURY HOSPITAL. (277 Beds.) The post of SENIOR HOUSE PHYSICIAN is now vacant at Stodmarsh Road Annexe. Duties include care of 30-Bedded unit of chest diseases, also work at the Chest Clinic and with the Pneumoconiosis Unit. National Health Service salary and conditions.

Applications, together with copies of 2 recent testimonials, to be addressed to the Hospital Secretary at the above Hospital.

CARDIFF HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER (surgical) required at Rookwood Hospital.

Form of application from Group Secretary, 44, Cathedral-road, Cardiff.

CARDIFF. THE UNITED CARDIFF HOSPITALS. Applications are invited for the post of MEDICAL REGISTRAR to the Miners' Chest Diseases Treatment Centre at Llandough Hospital, Penarth, Glam. The Centre caters for all types of chest diseases and it is closely associated with the adjoining Pneumoconiosis Research Unit of the Medical Research Council.

Application forms may be obtained from the Secretary to the Board at the Cardiff Royal Infirmary, Newport-road, Cardiff, and should be returned within 14 days of the appearance of this advertisement.

CARLUKE, LANARKSHIRE. LAW HOSPITAL. (790 Beds.) Applications are invited for the post of SENIOR HOUSE OFFICER (medical).

Applications, stating age, qualifications and previous experience, together with the names of 2 referees, should be sent to the Group Medical Superintendent.

CARSHALTON, SURREY. ST. HELIER HOSPITAL. (733 Beds.) Locum Part-time PÆDIATRIC REGISTRAR (6 sessions a week) for indefinite period from 22nd May.

Apply, giving details of qualifications and experience, and names of 2 referees, to Group Secretary at above address.

CHELMSFORD AND ESSEX HOSPITAL. Resident Locum Tenens REGISTRAR in Surgery required to work at the above Hospital for period 28th April–16th May.

Applications to the Secretary, Chelmsford Hospital Management Committee, London-road, Chelmsford.

CHESTERFIELD ROYAL HOSPITAL. (269 Beds. Recognised for F.R.C.S.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT or NON-RESIDENT SURGICAL REGISTRAR required 2nd July. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 5th May, 1958, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

CHESTERFIELD ROYAL HOSPITAL. (269 Beds.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT or NON-RESIDENT MEDICAL REGISTRAR required 1st July. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 5th May, 1958, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 rcferees.

CHICHESTER GROUP HOSPITAL MANAGEMENT COMMITTEE. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. RESIDENT REGISTRAR in Anæsthetics. Appointment, for 1 year (renewable), vacant 1st June, 1958. Duties chiefly at the Royal West Sussex and St. Richard's Hospitals. Recognised for F.F.A. R.C.S. Salary (Whitley terms and conditions) £935 first, £1061 10s. second year, less £170 p.a. for residence. National Health Service superannuation scheme. Hospitals may be visited.

Application forms, from Group Secretary, 174, Broyle-road, Chichester, Sussex, to be returned within 14 days.

CHICHESTER. ROYAL WEST SUSSEX HOSPITAL. (202 acute beds.) RESIDENT HOUSE SURGEON required for 6 months' appointment. National salary scales for either provisionally or fully registered practitioners. Post approved for pre-registration practitioners and F.R.C.S. 8 residents. Vacant 8th May.

Applications, stating age, experience, qualifications with references or names of referees, to Senior Administrative Officer.

CUCKFIELD HOSPITAL, Cuckfield, near Haywards HEATH. MID-SUSSEX HOSPITAL MANAGEMENT COMMITTEE. JUNIOR HOUSE SURGEON (Orthopædic and Traumatic Unit). Post vacant end of May. Not pre-registration.

Applications, giving age, nationality, qualifications and experience, with names of 2 referees, to Hospital Secretary.

CUCKFIELD HOSPITAL, Cuckfield, near Haywards HEATH, SUSSEX. MID-SUSSEX HOSPITAL MANAGEMENT COMMITTEE. RESIDENT SENIOR HOUSE OFFICER (general surgery). Post, recognised for Fellowship, now vacant. Tenable 6 months in the first instance.

Applications, stating age, qualifications, nationality and experience, with names of 2 referees, to Hospital Secretary.

CUCKFIELD HOSPITAL, Cuckfield, near Haywards HEATH. MID-SUSSEX HOSPITAL MANAGEMENT COMMITTEE. RESIDENT JUNIOR HOUSE SURGEON (general surgery). Pre-registration post vacant early May. Tenable 6 months. Health Service conditions.

Applications, stating age, nationality and experience, with names of 2 referees, to Hospital Secretary.

COLCHESTER GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications invited for:—

Black Notley Hospital, Braintree, Essex (522 Beds)

Post of HOUSE OFFICER (orthopædic surgery). Duties include care of cases from London Hospital Orthopædic Department. Pre-registration or third post, tenable for 6 months. Recognised for F.R.C.S.

Post of Locum Tenens SENIOR HOUSE OFFICER. Required for period 12th May–6th July, 1958, for Pulmonary Tuberculosis Unit. Also chest clinic work and non-tuberculous diseases of the lungs.

Post of Locum Tenens HOUSE SURGEON. Required immediately. Pre-registration or third post. Includes duties in general surgical and gynæcological wards. Recognised for F.R.C.S.

Clacton and District Hospital, Clacton-on-Sea, Essex (58 Beds)

Post of SENIOR HOUSE OFFICER (Resident Surgical Officer). Post tenable for 1 year.

Post of REGISTRAR (temporary) as Resident Casualty Officer during summer for period not exceeding 6 months.

Essex County Hospital, Colchester, Essex (181 Beds)

Post of HOUSE OFFICER to E.N.T. and Pædiatric Departments. Post tenable for 6 months. Post-registration appointment. Recognised for D.L.O. The Pædiatric Department consists of a new unit of 24 Beds.

Post of Locum SENIOR HOUSE OFFICER (anæsthetics) required from 20th May for approximately 2 months.

Harwich and District Hospital, Dovercourt, Essex (30 Beds)

Post of SENIOR HOUSE OFFICER. Duties include medical, surgical, and casualty work.

St. Mary's Hospital, Pope's Lane, Colchester

Post of RESIDENT MEDICAL OFFICER (Senior House Officer grade) at St. Mary's Hospital Geriatric Unit; also duties in connection with medical and surgical patients accommodated there, and duties at Essex County Hospital (general medical).

Post tenable for 6 or 12 months, resident.

Applications, with copies of 3 testimonials, to Secretary, Colchester Group Hospital Management Committee, 14, Pope's-lane, Colchester, Essex.

COTTINGHAM. CASTLE HILL SANATORIUM (221 Beds) and RAYWELL SANATORIUM, near COTTINGHAM (48 Beds). RESIDENT SENIOR HOUSE OFFICER to work under supervision of Consultant Chest Physician in Group Sanatoria with Major Thoracic Surgery Unit and Mass Radiography and laboratory facilities.

Application forms from Group Secretary, Hull B Group Hospital Management Committee, De la Pole Hospital, Willerby, E. Yorkshire.

DERBY. DERBYSHIRE ROYAL INFIRMARY (396 Beds) and DERBYSHIRE CHILDREN'S HOSPITAL (86 Beds). SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time NON-RESIDENT REGISTRAR (dermatology) required. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 5th May, 1958, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

DEVONPORT. SOUTH DEVON AND EAST CORNWALL HOSPITAL.

SENIOR HOUSE OFFICER in Surgery, vacant 1st June, 1958.

HOUSE SURGEON, pre-registration post, vacant 1st June, 1958.

Both recognised for the F.R.C.S.

Apply, with names of 3 referees, to the Group Secretary, 7, Nelson-gardens, Devonport.

DORKING GENERAL HOSPITAL. (252 Beds.) Applications are invited for the position of MEDICAL REGISTRAR to the Department of Medicine (40 acute medical beds), to commence duties on 1st June. The medical firm consists of a visiting Consultant Physician, a Medical Registrar (present post), and a Senior House Physician. Applicants should have had previous experience in general medicine and should for preference hold a higher qualification in medicine. There are unique opportunities for obtaining wide experience in all branches of medicine and in clinical research. The successful candidate must reside in or near the Hospital.

Application forms obtainable from Group Secretary, Redhill Hospital Management Committee, Earlswood Mount, Pendleton-road, Redhill, Surrey, and returnable within 14 days of advertisement.

DRIFFIELD, YORKSHIRE. EAST RIDING GENERAL HOSPITAL. (247 Beds.) JUNIOR HOUSE PHYSICIAN required early May. Approved pre-registration post, but fully registered practitioners may apply. Duties to include geriatrics and acute medicine. Good general experience for first house appointment.

Apply Group Secretary, Westwood Hospital, Beverley, Yorkshire.

DUDLEY, STOURBRIDGE AND DISTRICT HOSPITAL GROUP, BIRMINGHAM REGION.

The Corbett Hospital, Stourbridge (114 Beds)

HOUSE OFFICER (surgical), pre-registration. Post vacant now.

Wordsley Hospital, near Stourbridge (478 Beds)

SENIOR HOUSE OFFICER (surgical). Post vacant now.

HOUSE OFFICER (surgical), pre-registration. Post vacant now.

Applications, naming 2 referees, to Group Secretary, Guest Hospital, Dudley, Worcs.

EDGWARE GENERAL HOSPITAL, Edgware, Middlesex. (647 Beds.) RESIDENT HOUSE SURGEON (general and genitourinary) for above Hospital. Post vacant 18th May, 1958. 6 months' appointment. Post recognised for F.R.C.S. and pre-registration purposes.

Applications, stating age, qualifications and experience, and enclosing copies of up to 3 recent testimonials, to Medical Administrator of Hospital by 2nd May, 1958.

EDGWARE GENERAL HOSPITAL, Edgware, Middlesex. (647 Beds.) RESIDENT HOUSE PHYSICIAN for above Hospital. Post vacant 1st June, 1958. 6 months' appointment.

Applications, stating age, qualifications and experience, and enclosing copies of up to 3 recent testimonials, to Medical Administrator of Hospital by 2nd May, 1958.

EAST ANGLIAN REGIONAL HOSPITAL BOARD. ANÆSTHETIC REGISTRAR, West Norfolk and King's Lynn Hospital (146 Beds.) Post provides wide experience and recognised for D.A. Single accommodation available. Appointment for 1 year, renewable for second year.

Applications, stating age, experience, and the names of 3 referees, to Board's Senior Administrative Medical Officer, 117, Chesterton-road, Cambridge, by 12th May, 1958. Candidates invited to visit Hospital by direct arrangement with Hospital Management Committee Secretary at the Hospital.

EAST GRINSTEAD. QUEEN VICTORIA HOSPITAL. RESIDENT HOUSE OFFICER (Male or Female), permanent or locum appointment, required immediately for General Hospital. Appointment for 6 months in first instance; recognised for pre-registration purposes, and for F.R.C.S. examination.

Apply, stating age and experience, with names of 3 referees, to Hospital Secretary.

ENFIELD, MIDDLESEX. CHASE FARM HOSPITAL. RESIDENT HOUSE SURGEON, third post, vacant immediately. Post provides experience and duties in general surgery and orthopædics. 6-month appointment. Post recognised for F.R.C.S.

Applications, with the names and addresses of 2 referees, to the Group Secretary, Enfield Group Hospital Management Committee, at Chase Farm Hospital.

ENFIELD, MIDDLESEX. CHASE FARM HOSPITAL. RESIDENT HOUSE SURGEON, pre-registration post. Vacant 11th May, 1958. Duties with General Surgical Unit, doing some genitourinary work. Post recognised by the Royal College of Surgeons. 6-month appointment.

Applications, with the names and addresses of 2 referees, to the Group Secretary, Enfield Group Hospital Management Committee, at Chase Farm Hospital.

ENFIELD, MIDDLESEX. CHASE FARM HOSPITAL. RESIDENT ORTHOPÆDIC HOUSE SURGEON (third post). Vacant immediately. Post provides opportunity for general surgery. 6 months' appointment. Post recognised for F.R.C.S.

Applications, with the names and addresses of 2 referees, to the Group Secretary, Enfield Group Hospital Management Committee, at Chase Farm Hospital.

ENFIELD. WAR MEMORIAL HOSPITAL, Chase Side, ENFIELD, MIDDLESEX. RESIDENT SENIOR HOUSE OFFICER required immediately for general medical and surgical duties in acute general hospital of 61 Beds. 12 months' appointment.

Applications, with names and addresses of 2 referees, to the Group Secretary, Enfield Group Hospital Management Committee, Chase Farm Hospital, The Ridgeway, Enfield, Middlesex.

EPSOM DISTRICT HOSPITAL, Dorking-road, Epsom, SURREY. RESIDENT HOUSE SURGEON required 11th June, pre-registration post recognised for F.R.C.S.

Applications, stating age, qualifications and experience, with copies of 2 recent testimonials, should be sent as soon as possible to Group Secretary at above address.

EPSOM DISTRICT HOSPITAL, Dorking-road, Epsom, SURREY. RESIDENT HOUSE PHYSICIAN required 8th June. Fully registered post.

Applications, stating age, qualifications and experience, with copies of 2 recent testimonials, should be sent as soon as possible to Group Secretary, at above address.

EPSOM, SURREY. LONG GROVE HOSPITAL (For Mental and Nervous Disorders). (2100 Beds.) SOUTH WEST METROPOLITAN REGION. Applications invited for appointment (in July, 1958) as Whole-time PSYCHIATRIC REGISTRAR. The Hospital affords opportunity for experience of all modern methods of investigation and treatment. There is an extensive outpatients service and facilities are given to study for the D.P.M. (The Hospital is approved for the Conjoint D.P.M.)

Applications obtainable from the Secretary, and returnable to him by 9th May, 1958. Candidates welcome to visit the Hospital by appointment with the Physician-Superintendent.

HAREFIELD HOSPITAL REGIONAL THORACIC SUR-GICAL UNIT, HAREFIELD, MIDDLESEX. NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for the post of SURGICAL REGISTRAR to the Harefield Thoracic Surgical Unit, which serves the North West Metropolitan Region. In the Hospital there are 90 Beds for non-tuberculous surgical chest conditions and 360 Beds for tuberculosis. The appointment thus affords a wide experience in all aspects of thoracic surgery. Candidates must have had previous surgical experience and preference will be given to candidates with a higher surgical qualification. The appointment will be held in the first instance for 1 year.

Application forms obtainable from, and returnable, to the Group Secretary, Harefield and Northwood Group Hospital Management Committee, Mount Vernon Hospital, Northwood, Middlesex, by 13th May, 1958.

HAREFIELD AND NORTHWOOD GROUP HOSPITAL MANAGEMENT COMMITTEE. ORTHOPÆDIC REGISTRAR required for this group of hospitals. Work involves sessions at Harefield, Mount Vernon and Northwood, Pinner and District Hospitals, together with 3 sessions at St. Vincent's Orthopædic Hospital.

Application forms obtainable from, and returnable to, the Group Secretary, Harefield and Northwood Group Hospital Management Committee, Mount Vernon Hospital, Northwood, Middlesex, by 13th May, 1958.

HASTINGS. ROYAL EAST SUSSEX HOSPITAL. (150 Beds.) HOUSE SURGEON (pre-registration post) for general surgery and urology required at this Acute Hospital (Surgical) on 1st June, 1958.

Applications, with names of 2 referees, to Administrator.

GRAVESEND AND NORTH KENT HOSPITAL, Graves-END, KENT. MEDWAY AND GRAVESEND HOSPITAL MANAGEMENT COMMITTEE. HOUSE SURGEON. Applications are invited for this resident post (1 of 5 at the Hospital) which is approved for pre-registration purposes and recognised for the F.R.C.S. The successful applicant will be attached to 2 Consultant Surgeons with opportunities for extensive surgery and vascular work. Salary £467 10s.–£577 10s. p.a. according to experience.

Applications to Hospital Secretary, stating age, experience, qualifications, and nationality.

GUILDFORD. ROYAL SURREY COUNTY HOSPITAL. RESIDENT HOUSE PHYSICIAN required from 19th May. Post is tenable for 6 months and recognised for pre-registration candidates.

Applications, with copies of 3 testimonials, to be sent to the Hospital Secretary as soon as possible.

GUILDFORD. ROYAL SURREY COUNTY HOSPITAL. Locum Tenens HOUSE SURGEON required 1st or 10th–24th May, for general surgery.

Applications, with full particulars and copies of testimonials, to Hospital Secretary as soon as possible. Telephone Guildford 2323.

GUILDFORD. ROYAL SURREY COUNTY HOSPITAL. RESIDENT HOUSE SURGEON required for General Surgery. Vacant early May and tenable for 6 months. It is approved for pre-registration candidates and also recognised for the F.R.C.S. examination.

Applications, with copies of 3 testimonials, should be sent to the Hospital Secretary.

HENLEY-ON-THAMES, OXFORDSHIRE. PEPPARD CHEST HOSPITAL. (236 Beds.) READING AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the post of JUNIOR HOSPITAL MEDICAL OFFICER, vacant 28th April, 1958. The Hospital deals with all types of chest disease in medical and surgical wards. Previous experience in resident hospital appointments is desirable. Single accommodation is available.

Applications, stating age, qualifications and experience, with the names of 2 referees, should be forwarded to the Group Secretary, Reading and District Hospital Management Committee, 3, Craven-road, Reading.

HUDDERSFIELD. ST. LUKE'S HOSPITAL. (235 Beds.) HUDDERSFIELD HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of RESIDENT MEDICAL OFFICER (Senior House Officer grade) at the above Hospital, to commence duties immediately. The duties will be mainly surgical, in a hospital which caters for chronic sick, children, maternity, and acute medical and surgical patients. Salary in accordance with the terms and conditions of service for hospital medical and dental staff, £819 10s. p.a.

Applications, together with copies of 3 recent testimonials, to be sent to the undersigned as soon as possible.

H. J. JOHNSON,
Secretary to the Management Committee.
The Royal Infirmary, Huddersfield.

HULL. VICTORIA HOSPITAL FOR SICK CHILDREN, Park-street. (115 Beds.) HOUSE SURGEON required on 22nd May, 1958. Pre-registration or registration post. Recognised for D.C.H. An interesting and varied post which includes outpatient and casualty work.

Applications, together with details of experience, testimonials, &c., to the Hospital Secretary.

HUNTINGDON COUNTY HOSPITAL. Applications are invited for the post of HOUSE OFFICER (surgical), now vacant. Post recognised for pre-registration purposes.

Apply, with full particulars and names of 2 referees, to Secretary, County Hospital, Huntingdon.

ILFORD. KING GEORGE HOSPITAL, Eastern-avenue. There will be a vacancy for a HOUSE PHYSICIAN at above Hospital on 26th May, 1958. First or second post pre-registration. The post will be tenable for 6 months.

Applications, giving full particulars and accompanied by testimonials, should be sent to the undersigned within 7 days of the appearance of this advertisement.

H. F. HARRIS, Group Secretary,
Ilford and Barking Group Hospital Management Committee.

ILFORD. KING GEORGE HOSPITAL, Eastern-avenue. There will be the following vacancies for HOUSE SURGEONS at above Hospital:—

First or second post pre-registration, 19th May.
Second post pre-registration, 1st June.
First or second post pre-registration, 2nd June.
All posts will be tenable for 6 months.

Applications, giving full particulars and accompanied by testimonials, should be sent to the undersigned within 7 days of the appearance of this advertisement.

H. F. HARRIS, Group Secretary,
Ilford and Barking Group Hospital Management Committee.

IPSWICH AND EAST SUFFOLK HOSPITAL (Heath-ROAD WING), IPSWICH. (280 Beds.) HOUSE PHYSICIAN (pre-registration). Post vacant 6th June.

Applications, with copies of 3 recent testimonials, to Secretary.

ISLEWORTH. WEST MIDDLESEX HOSPITAL. Regis-TRAR in Physical Medicine. The department is recognised for Diploma in Physical Medicine and there is an inpatient unit of 10 Beds. Preference given to candidates possessing Part I Diploma Physical Medicine.

Applications to Group Secretary, South West Middlesex Hospital Management Committee, West Middlesex Hospital, Isleworth, by 6th May, 1958.

ISLEWORTH. WEST MIDDLESEX HOSPITAL. House OFFICER, Traumatic and Orthopædic Surgery Unit (58 Beds). Recognised for F.R.C.S. Post vacant 4th June, 1958. Pre-registration or registered candidates.

Applications, stating age, qualifications and experience, with copies of up to 2 testimonials, to Group Secretary, South West Middlesex Hospital Management Committee, West Middlesex Hospital, Isleworth, by 6th May, 1958.

KETTERING AND DISTRICT GENERAL HOSPITAL, NORTHAMPTONSHIRE. Applications are invited for the post of Locum HOUSE SURGEON (pre-registration), from 1st April for 2 months. Post recognised for F.R.C.S.

Applications, stating age, experience, and qualifications, together with copies of 3 recent testimonials, to be sent to the Group Secretary at the above address.

LANCASTER MOOR HOSPITAL, LANCASTER. (Regional Mental Hospital.) Applications are invited for the post of RESIDENT JUNIOR HOSPITAL MEDICAL OFFICER, Male or Female. Furnished quarters for single candidate or furnished flat for married candidate. The Hospital serves North Lancashire and the Lake District, is recognised for the D.P.M., and all facilities will be given for taking this examination. All modern methods of investigation and treatment are carried out and opportunity will be given to successful candidates to attend outpatients and become acquainted with up-to-date psychological and electroencephalographic investigations. The post is for an initial period of 4 years but renewable if service is satisfactory.

Apply to Medical Superintendent, giving names of 2 referees, within 2 weeks of the appearance of this advertisement.

LEEDS REGIONAL HOSPITAL BOARD. Registrar vacancies.

Anæsthetics

(*a*) St. James's Hospital, Leeds (approximately 500 surgical beds). Recognised for F.F.A. R.C.S. Resident.

(*b*) Huddersfield Group (approximately 225 Beds in the surgical specialties). Non-resident.

Chest Diseases

Castle Hill Sanatorium, Cottingham, near Hull, E. Yorks (220 Beds). Person appointed will also work in close association with the Thoracic Surgical Unit at Castle Hill, the Hull Chest Clinic and the Mass Radiography Unit. Single or married accommodation available.

Infectious Diseases

Castle Hill Hospital, Cottingham (167 infectious diseases beds).

General Medicine

(*a*) Halifax General Hospital (110 general medical beds). Resident.

(*b*) Pontefract and Castleford Group (65 general medical beds). Married accommodation available.

(*c*) Scarborough, Bridlington, Malton and Whitby Group (67 medical beds). Furnished cottage available at an economic rent.

(*d*) St. James's Hospital, Leeds (to be associated with 50 Beds under the clinical care of Physicians from the Teaching Hospital). Resident or non-resident. The successful candidate will be required to live-in 1 day in 3, if non-resident.

General Surgery

Hull Royal Infirmary (80 general surgical beds) and other hospitals in the Hull A Group including additional duties in the Casualty Department. Non-resident.

Obstetrics and Gynæcology

St. Luke's Hospital, Bradford (118 obstetric and 105 gynæcological beds). Recognised for M.R.C.O.G. Resident.

Pædiatrics

Victoria Hospital for Sick Children, Hull, and other general hospitals with pædiatric beds in the Hull A and East Riding Hospital Management Committee Groups (aggregate 150 Beds). Non-resident.

Psychiatry

Scalebor Park Hospital (300 Beds). Annual admission-rate approximately 450. Accommodation available for single person. Facilities for attendance at Leeds University will be provided if the successful candidate is studying for the D.P.M.

Applications, stating age, qualifications and details of present and previous appointments with dates, together with the names and addresses of 3 referees, to the Secretary, Joint Registrars Committee, Park-parade, Harrogate, by 30th April, 1958.

LEEDS REGIONAL HOSPITAL BOARD. Senior Registrar vacancies.

Anæsthetics

Hull A Group of hospitals with additional duties as required in the Hull B and East Riding Groups. Non-resident.

Infectious Diseases

Seacroft (Infectious Diseases) Hospital, Leeds (200 infectious diseases beds with a high average occupancy). The post will be resident, and previous experience in infectious diseases is essential.

Orthopædic Surgery

Bradford A and B Groups with duties mainly at Bradford Royal Infirmary and at Woodlands Orthopædic Hospital, Rawdon.

Otolaryngology

Royal Eye and Ear Hospital, Bradford (67 E.N.T. beds in the Group).

Pathology

Bradford A and B Groups. Non-resident.

Psychiatry

St. James's Hospital, Leeds (General Hospital Psychiatric Unit). Candidates must hold the D.P.M. or equivalent qualification. This appointment offers excellent opportunity for experience in dealing with neurosis. The work will be in association with the University Department of Psychiatry, research and teaching may be undertaken.

Applications, stating age, qualifications and details of present and previous appointments with dates, together with the names and addresses of 3 referees, to the Secretary, Joint Registrars Committee, Park-parade, Harrogate, by 7th May, 1958.

LEEDS. UNIVERSITY OF LEEDS. UNITED LEEDS HOSPITALS. Applications are invited for the post of SENIOR REGISTRAR AND TUTOR in Orthopædics.

Applications (3 copies), stating date of birth, qualifications and details of present and previous appointments with dates, and experience of teaching, together with the names of 3 referees, should reach the Registrar, The University, Leeds, 2 (from whom further particulars may be obtained), not later than 19th May, 1958.

LEEDS. UNITED LEEDS HOSPITALS/LEEDS REGIONAL HOSPITAL BOARD. Applications are invited for the post of SENIOR REGISTRAR in Psychiatry associated with the Leeds University Department of Psychiatry. The successful candidate will undertake duties in connection with the clinical, teaching and research work of the Department at the General Infirmary and St. James's Hospital, Leeds. Candidates should hold high medical qualifications and a Diploma in Psychological Medicine or equivalent.

Applications, stating age, qualifications and details of appointments held, showing dates, together with the names and addresses of 3 referees, should be forwarded to the Secretary, Joint Registrars Committee, Park-parade, Harrogate, by 7th May, 1958.

LEAMINGTON SPA. WARNEFORD GENERAL HOSPITAL. (197 Beds.) CASUALTY OFFICER (Senior House Officer), Male or Female, resident or non-resident, and suitable for one reading for higher qualifications, being recognised for F.R.C.S., affording contact with all specialist units in the Hospital.

Applications, with names and addresses of 3 referees, to Hospital Secretary.

LEICESTER ISOLATION HOSPITAL AND CHEST UNIT, Groby-road, LEICESTER. (328 Beds.) Applications are invited for the appointment of RESIDENT SENIOR HOUSE OFFICER (surgical). Salary £819 10s. p.a. less £150 residential emoluments. The appointment is tenable for 6 months, and may be extended for a further period of 6 months. Experience will be gained in all branches of thoracic surgery, including cardiac surgery. The post is recognised for the Final Fellowship.

Applications, giving age, qualifications, dates, &c., and copies of 2 recent testimonials, to be forwarded as soon as possible to the Department of Thoracic Surgery at the above Hospital.

LINCOLN. ST. GEORGE'S HOSPITAL. (242 Beds.) LINCOLN NO. 1 HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the pre-registration post of HOUSE PHYSICIAN at the above Hospital, vacant from 1st May. Duties include acute medical, acute chest and pædiatrics.

Applications, giving full particulars and names for reference, should be addressed to the Secretary.

LOUTH COUNTY HOSPITAL. (215 Beds. Recognised for training for F.R.C.S.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT or NON-RESIDENT SURGICAL REGISTRAR required immediately. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 5th May, 1958, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

MAIDSTONE. WEST KENT GENERAL HOSPITAL. (141 Beds.) MID-KENT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the pre-registration post of HOUSE SURGEON. 6 months' appointment. Vacant now. Recognised for F.R.C.S. Salary at the rate of £467 10s.–£577 10s. p.a. A deduction at the rate of £125 a year is made for board and lodging, and other services provided.

Applications should be forwarded, as soon as possible, to the Administrative Officer at the Hospital.

MANCHESTER, 4. ANCOATS HOSPITAL. Applications are invited for the post of CASUALTY OFFICER (Senior House Officer). Recognised for F.R.C.S. Vacant 26th May, 1958.

Applications, with names of 2 referees, by 6th May, 1958, to Group Secretary, North Manchester Hospital Management Committee, Crumpsall Hospital, Manchester, 8.

MANCHESTER REGIONAL HOSPITAL BOARD and THE BOARD OF GOVERNORS OF THE UNITED MANCHESTER HOSPITALS. 4 whole-time, non-resident posts of SENIOR HOUSE OFFICER status, commencing mid-October, 1958, tenable for 2 years. Facilities will be granted to attend the University course for the D.M.R.(D) which the successful candidates must be prepared to take and of which details may be obtained from the Dean of Postgraduate Medical Studies, the University of Manchester. Arrangements will be made for trainees to gain wide experience in all branches of radiodiagnosis in several hospitals, including the Teaching Hospital.

Applicants must fulfil the requirements of the Examining Board in England, 8–11, Queen-square, London, W.C.1, for the D.M.R.(D) and must submit written evidence to that effect with their applications, which should be forwarded, with copies of 2 recent testimonials, to the Senior Administrative Medical Officer, Manchester Regional Hospital Board, Cheetwood-road, Manchester, 8, by 19th May, 1958.

MANCHESTER REGIONAL HOSPITAL BOARD invites applications for post of resident or non-resident SURGICAL REGISTRAR to Macclesfield District Group of hospitals, main duties Infirmary Branch Macclesfield Hospital. Hospital recognised under F.R.C.S. regulations.

Apply immediately, with names and addresses of 2 referees, to Group Secretary, Willerby House, Cumberland-street, Macclesfield.

MANCHESTER. UNITED MANCHESTER HOSPITALS. MANCHESTER ROYAL EYE HOSPITAL. Applications are invited for the post of SENIOR RESIDENT HOUSE OFFICER.

Application forms may be obtained from H. R. NORTH, General Superintendent, Manchester Royal Eye Hospital.

MANCHESTER. UNITED MANCHESTER HOSPITALS, SAINT MARY'S HOSPITALS, MANCHESTER. Applications are invited for the post of SENIOR HOUSE OFFICER in Gynæcology. Applicants must have had previous hospital experience in medicine and surgery. The post is recognised for the purpose of the M.R.C.O.G. examination. The appointment is for 6 months starting 1st July, 1958. Salary in accordance with national scales.

Application forms may be obtained from the undersigned and returned not later than 12th May, 1958.

A. R. WISE, General Superintendent.
Saint Mary's Hospitals, Whitworth Park, Manchester, 13.

MANCHESTER. UNITED MANCHESTER HOSPITALS, SAINT MARY'S HOSPITALS, MANCHESTER. Applications are invited for the post of HOUSE OFFICER in Obstetrics for 6 months from 1st July, 1958. Salary in accordance with national scales.

Application forms may be obtained from the undersigned and returned not later than 12th May, 1958.

A. R. WISE, General Superintendent.

Saint Mary's Hospitals, Whitworth Park, Manchester, 13.

MANCHESTER. UNITED MANCHESTER HOSPITALS, SAINT MARY'S HOSPITALS, MANCHESTER. Applications are invited for the post of OBSTETRICAL HOUSE SURGEON to a maternity unit operating temporarily in the Whitworth Park Branch of the above named Hospital, vacant 15th July, 1958. The post is supernumerary to the establishment recognised for training purposes by the Royal College of Obstetricians and Gynæcologists. Previous obstetrical experience is desirable. An opportunity exists for a limited amount of gynæcological training during tenure of the post. National scale.

Application forms, which may be obtained from the undersigned, to be returned no later than 12th May, 1958.

A. R. WISE, General Superintendent.

Saint Mary's Hospitals, Whitworth Park, Manchester, 13.

MANCHESTER. UNITED MANCHESTER HOSPITALS, SAINT MARY'S HOSPITALS, MANCHESTER. Applications are invited from registered medical practitioners, Male or Female, for 2 posts of HOUSE PHYSICIAN in the Neonatal Unit of Saint Mary's Hospitals (attached to the University Department of Child Heath) for a period of 6 months, 1 vacant immediately, the other vacant on 1st July, 1958. Previous hospital experience essential and pædiatric experience desirable. Duties include the care of the newborn in the Maternity Department, the care of infants in the infants' ward and work in the clinics under the charge of the Department of Child Health. Salary in accordance with national scales.

Applications, stating qualifications and experience together with the names of 3 referees, should be sent to the undersigned not later than 12th May, 1958.

A. R. WISE, General Superintendent.

Saint Mary's Hospitals, Whitworth Park, Manchester, 13.

MANCHESTER. UNITED MANCHESTER HOSPITALS. MANCHESTER ROYAL INFIRMARY, MANCHESTER, 13. SENIOR HOUSE OFFICER to the Department of Anæsthetics, to commence on 4th September, 1958. Whole-time, resident appointment for 6 months, renewable for a second and possibly a third 6 months.

Application form obtainable from the Secretary, to be returned by 18th May, 1958.

MANCHESTER. BOOTH HALL CHILDREN'S HOSPITAL, BLACKLEY, MANCHESTER, 9. (380 Beds. Recognised for D.C.H.) RESIDENT SENIOR HOUSE OFFICER (medical). Post vacant 1st August.

Applications, giving names and addresses of 2 referees, to be sent to Group Secretary (from whom further particulars may be obtained) not later than 14th May.

MIDDLESBROUGH GENERAL HOSPITAL, Ayresome Green-lane, MIDDLESBROUGH. (305 Beds.) SOUTH TEES-SIDE HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of HOUSE OFFICER (general surgery) at the above Hospital. The post is recognised for pre-registration service under the Medical Act, 1950, and is now vacant.

Applications, stating full details and giving 2 names for reference, should be addressed to the Hospital Secretary at the above address.

NANTWICH. BARONY HOSPITAL. Junior Hospital MEDICAL OFFICER (resident or non-resident—temporary or permanent) required for duties in Department of Psychiatry (93 Beds), which is a very active unit, including Outpatient Clinics and Outpatient Treatment Centre. Personal supervision and teaching by Consultant Psychiatrist. Good experience available in all methods of treatment. Quarters for a single person are available at the hospital.

Applications, stating age, qualifications, &c., with names of 2 referees, to be sent to the Group Secretary, South Cheshire Hospital Management Committee, Barony Hospital, Nantwich, Cheshire, as soon as possible.

NEWARK GENERAL HOSPITAL. Nottingham No. 1 HOSPITAL MANAGEMENT COMMITTEE. JUNIOR HOSPITAL MEDICAL OFFICER (medical) required for above Hospital situated on Great North-road, approximately 20 miles from Nottingham. Post offers good experience. Consultant staff attending Newark Hospital are on 1 or more of the Nottingham Hospitals. Flat available as married quarters. Salary and conditions of service in accordance with Ministry regulations. Duties to commence about 29th April, 1958.

Applications, giving names of 3 referees, should be sent to Group Secretary, Nottingham No. 1 Hospital Management Committee, General Hospital, Nottingham.

NORTHAMPTON. ST. ANDREW'S HOSPITAL. Applications are invited from registered medical practitioners for the appointment of SENIOR HOUSE OFFICER. The successful candidate will work in the Hospital and outpatient clinics. The Hospital is recognised for training for the D.P.M. Exceptional postgraduate facilities are available. Salary £669 10s. p.a., together with full residential emoluments, valued for superannuation purposes at £150 p.a. The Hospital operates outside the National Health Service, but reciprocity has been granted between the National Health Service superannuation scheme and the Hospital superannuation scheme, so that years of service are transferable in either direction.

Applications, stating age, qualifications, experience, &c., together with copies of 3 recent testimonials, to be addressed to the Medical Superintendent.

NORTHAMPTON. ST. ANDREW'S HOSPITAL. Applications are invited from registered medical practitioners for the appointment of Locum Tenens MEDICAL OFFICER during holiday season. Previous psychiatric experience not necessary. Salary 20 guineas per week plus residential emoluments.

Applications to be addressed to the Medical Superintendent.

NEWCASTLE REGIONAL HOSPITAL BOARD. REGISTRAR PSYCHIATRIST, whole-time, resident at St. Nicholas Hospital, Gosforth, Newcastle upon Tyne (1190 Beds). Married accommodation available. Good experience and training in psychiatry offered. Facilities are available for the appointee to take the Durham University D.P.M. course. Further particulars from Regional Psychiatrist.

Applications, with names and addresses of 3 referees, to Regional Psychiatrist, Regional Hospital Board, Benfield-road, Newcastle upon Tyne, 6, within 14 days.

NEWCASTLE. THE UNITED NEWCASTLE UPON TYNE HOSPITALS. Applications are invited for the Whole-time appointment of REGISTRAR in the Department of Anæsthetics at the Royal Victoria Infirmary, which is associated with the Medical School of the University of Durham. The post, which is non-resident except for rotational emergency duty, will be for 1 year in the first instance and is subject to the terms and conditions of service of hospital medical staff in the National Health Service. It offers opportunity for study for the F.F.A.R.C.S. examination. Applicants should have held postgraduate appointments in medicine and surgery and should have had some experience in anæsthetics.

Applications, giving full details and the names and addresses of 3 referees, should be sent to the undersigned within 2 weeks of the appearance of this advertisement.

A. W. SANDERSON, House Governor and Secretary.

Royal Victoria Infirmary, Newcastle upon Tyne.

NEWCASTLE. THE UNITED NEWCASTLE UPON TYNE HOSPITALS. Applications are invited for the 2 Whole-time appointments of SENIOR HOUSE OFFICER in the Department of Anæsthetics at the Royal Victoria Infirmary, which is associated with the Medical School of the University of Durham. The posts will be for 1 year and will be subject to the terms and conditions of service of hospital medical staff in the National Health Service. They will be non-resident except for rotational emergency duty and offer the opportunity for study for the F.F.A. R.C.S. Applicants should have held postgraduate appointments in medicine and surgery, but previous experience in anæsthetics is not essential.

Applications, giving full details and the names and addresses of 3 referees, should be sent to the undersigned within 2 weeks of the appearance of this advertisement.

A. W. SANDERSON, House Governor and Secretary.

Royal Victoria Infirmary, Newcastle upon Tyne.

NORWICH. UNITED NORWICH HOSPITALS. Applications are invited for the appointment of HOUSE SURGEON at the West Norwich Hospital (Male or Female). This is a pre-registration post and recognised for final F.R.C.S. examination requirements. Duties general surgical and including burns and plastic work. Membership of a medical defence society is a condition of appointment.

Applications, giving full details, with names of 2 referees, to Group Secretary, Hospital Management Committee, St. Stephen's-road, Norwich, immediately.

NORWICH. UNITED NORWICH HOSPITALS. Applications are invited for the appointment of Locum HOUSE SURGEON at the West Norwich Hospital (Male or Female). This is a pre-registration post and recognised for final F.R.C.S. examination requirements. Duties general surgical and including burns and plastic work. Membership of a medical defence society is a condition of appointment.

Applications, giving full details, with names of 2 referees, to Group Secretary, Hospital Management Committee, St. Stephen's-road, Norwich, immediately.

NOTTINGHAM CHILDREN'S HOSPITAL. (136 Beds.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT SURGICAL REGISTRAR required. Duties include work in the Casualty Department. Appointment for 1 year in the first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 5th May, 1958, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

NOTTINGHAM CITY HOSPITAL. (811 Beds.) Applications are invited for the post of HOUSE SURGEON, vacant 4th May, 1958. Recognised for pre-registration purposes.

Applications, stating age, nationality, qualifications and experience, together with copies of not more than 3 testimonials, to be sent to the Hospital Secretary, City Hospital, Hucknall-road, Nottingham.

NOTTINGHAM GENERAL HOSPITAL. (441 Beds. Recognised for the F.F.A.R.C.S.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT or NON-RESIDENT REGISTRAR (anæsthetics) required. Appointee will be 1 of a team of 4 who also cover Nottingham Hospital for Women and Nottingham Children's Hospital on a 3-monthly rota.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 5th May, 1958, giving age, nationality, present and previous appointments with dates, naming 3 referees.

NOTTINGHAM. HIGHBURY HOSPITAL, Bulwell, NOTTINGHAM. SENIOR HOUSE OFFICER (medical), resident, required. Duties to commence on 23rd May, 1958. The successful candidate will, in addition to medical duties, have an opportunity of assisting in the obstetric unit. This post will be accepted as a general medical appointment entry to the M.R.C.O.G. examination.

Apply in writing, stating age, qualifications and experience together with copies of testimonials, to the Hospital Secretary.

OLDHAM AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of RESIDENT REGISTRAR in Pædiatrics, probably vacant early in July, with duties in the Oldham and District, and Ashton, Hyde, and Glossop Groups of hospitals. Residence, and main duties, are at the Oldham and District General Hospital.

Applications, together with the names of 2 referees, should be forwarded immediately to the Group Secretary, Oldham and District Hospital Management Committee, Central Offices, Rochdale-road, Oldham.

NEWTON ABBOT HOSPITAL. (General section, 65 Beds.) RESIDENT SENIOR HOUSE SURGEON, Male or Female, required approximately end May, 1958. Married quarters available.

Applications, quoting Ref. F.364/40, stating qualifications, nationality, age, with copy testimonials, to be sent to the Group Secretary, Torquay District Hospital Management Committee, Torbay Hospital, Torquay, South Devon.

ORPINGTON HOSPITAL, Orpington, Kent. Resident SENIOR HOUSE OFFICER ANÆSTHETIST required for large general hospital. Male or Female. Recognised for D.A.

Applications, with copies of 2 recent testimonials, to Surgeon-Superintendent immediately.

OXFORD REGIONAL HOSPITAL BOARD. Senior REGISTRAR in Psychiatry at St. Crispin Hospital, Duston, Northampton. House available near Hospital. Appointment for 1 year in the first instance, and, subject to satisfactory service, renewable for up to 4 years. It may be possible to arrange transfer to another mental hospital in the Oxford Region for the second half of the appointment. St. Crispin Hospital provides full training facilities, including E.E.G. Department. Previous experience in child-guidance work desirable. Applicants should hold the D.P.M.

Applications, on forms obtainable from the Secretary, Joint Committee for Senior Registrars, 43, Banbury-road, Oxford, should reach him by 16th May.

OXFORD REGIONAL HOSPITAL BOARD. Senior REGISTRAR in Anæsthetics to the hospitals of the Aylesbury High Wycombe area. Duties mainly in Aylesbury area. Appointment for 1 year in the first instance, eligible for extension up to 4 years. Vacant mid-June.

Applications, on forms obtainable from the Secretary, Joint Committee for Senior Registrars, 43, Banbury-road, Oxford, by 27th May.

OXFORD REGIONAL HOSPITAL BOARD. Registrar in Orthopædic and Accident Surgery to the Hospitals and Clinics of the Aylesbury area. The appointment which is now vacant, will be for 1 year and eligible for extension to a second year. Married accommodation will be available shortly.

Applications, on forms obtainable from the Secretary, Registrars Committee, 43, Banbury-road, Oxford, should reach him by 10th May.

OXFORD. UNITED OXFORD HOSPITALS (the teaching hospital group associated with the University of Oxford). Applications are invited for the post of FIRST ASSISTANT (Senior Registrar) in the Department of Otolaryngology at the Radcliffe Infirmary. The appointment is full-time and duties lie mainly within the United Oxford Hospitals, but they carry honorary attachment at certain hospitals of the Regional Hospital Board in connection with visits made to those hospitals by Oxford Consultants. Candidates must hold the Diploma of Fellowship of a Royal College of Surgeons and must have had satisfactory experience in the specialty as Registrar.

Applications, on forms obtainable from the Administrator, Radcliffe Infirmary, Oxford, should be received not later than Saturday, 24th May, 1958, and further particulars may be obtained from the Director of the Department.

PAISLEY. ROYAL ALEXANDRA INFIRMARY. Junior HOSPITAL MEDICAL OFFICER required for Orthopædic Unit at above Infirmary.

Applications to Group Medical Superintendent.

PORTSMOUTH GROUP HOSPITAL MANAGEMENT COMMITTEE.

Royal Portsmouth Hospital

(*a*) HOUSE SURGEON (pre-registration). Vacant now.
(*b*) SENIOR HOUSE OFFICER required in Orthopædic Department (104 Beds). Vacant now.

Applications, stating age, experience and qualifications, together with the names of 2 referees, should be forwarded as soon as possible to E. H. HURST.

St. Mary's Hospital, Milton-road, Portsmouth.

PORTSMOUTH GROUP HOSPITAL MANAGEMENT COMMITTEE. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for the post of RADIOLOGICAL REGISTRAR (diagnostic) to the Portsmouth Group of hospitals, vacant 18th June or possibly before. A Diploma in Diagnostic Radiology would be an advantage, but candidates working for it would be considered.

Forms of application may be obtained from the Group Secretary, Portsmouth Group Hospital Management Committee, Saint Mary's Hospital, Milton, Portsmouth, which should be returned to him duly completed on or before 5th May, 1958. Candidates may visit the above Group by arrangement with the Group Secretary.

PLYMOUTH, SOUTH DEVON AND EAST CORNWALL GENERAL HOSPITAL GROUP. Area Pathological Department. Applications invited from duly qualified and registered medical practitioners for the appointment of RESIDENT SENIOR HOUSE OFFICER in Pathology. The post is recognised for non-university experience for D.Path., Royal College of Physicians and Surgeons. The appointment will be for a period of 12 months, in the Area Laboratory at the South Devon and East Cornwall Hospital, Greenbank-road, Plymouth, which provides excellent modern working facilities.

Applications, stating age, nationality, qualifications and experience, together with the names and addresses of 3 referees, to be sent as soon as possible to Group Secretary, 7, Nelson-gardens, Stoke, Plymouth.

PLYMOUTH. SOUTH DEVON AND EAST CORNWALL HOSPITAL. SENIOR HOUSE OFFICER in Medicine, vacant 11th June, 1958.

Applications, with names of 3 referees, to Group Secretary, 7, Nelson-gardens, Devonport.

PLYMOUTH. SOUTH DEVON AND EAST CORNWALL HOSPITAL, Greenbank-road. HOUSE SURGEONS, pre-registration posts, vacancies 1st and 6th June, also 1st July, 1958. Recognised for the F.R.C.S.

Applications, with full particulars, to the Group Secretary.

PLYMOUTH. SOUTH DEVON AND EAST CORNWALL HOSPITAL, FREEDOM FIELDS. Central Casualty Department. RESIDENT SENIOR HOUSE OFFICER in Casualty, vacant immediately. Recognised for the F.R.C.S.

Applications, with names of 3 referees, to be sent to the Group Secretary.

PLYMOUTH. SOUTH DEVON AND EAST CORNWALL HOSPITAL. SENIOR HOUSE OFFICER in Anæsthetics, vacant 1st July, 1958. Recognised for the D.A. and F.F.A R.C.S.

Applications, giving age, nationality and experience, with names of 3 referees, sent to Group Secretary, 7, Nelson-gardens, Stoke, Plymouth.

POOLE GENERAL HOSPITAL, Poole, Dorset. (262 Beds.) BOURNEMOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. CASUALTY OFFICER (Senior House Officer) required immediately. Resident or non-resident; self-contained flat may be available. No weekend duties. Post suitable for persons reading for higher diplomas.

Applications to the Hospital Secretary.

POOLE GENERAL HOSPITAL, Poole, Dorset. BOURNEMOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. 2 HOUSE SURGEONS required. The posts, which become vacant on 11th May and 1st June, are recognised for the F.R.C.S., F.R.C.S. (Ed.), and for pre-registration purposes.

Applications to the Hospital Secretary.

PRESTON (near). WHITTINGHAM HOSPITAL MAN-AGEMENT COMMITTEE invites applications for the post of JUNIOR HOSPITAL MEDICAL OFFICER. All modern treatment is undertaken, including electro-encephalography for the area. Facilities will be given for study either for the D.P.M. at Manchester University or for the M.R.C.P. at a large general hospital a few miles away. The Hospital is well situated in a country district with easy access to Preston, Blackpool, and Southport. Flat if required at rental of 17s. per week, partly furnished by arrangement if desired.

Applications to the Medical Superintendent, Whittingham Hospital, near Preston, Lancashire, to be received not later than 9th May.

READING. BATTLE HOSPITAL. (391 Beds.) Reading AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for 2 posts of RESIDENT JUNIOR HOUSE SURGEON (pre- or post-registration) required in the Accident and Orthopædic Department. F.R.C.S. recognised. Also casualty duties. Vacant 1st and 18th May, 1958.

Apply, stating age, qualifications with dates, nationality, present post, with copy of recent testimonial, to Secretary.

READING COMBINED HOSPITALS. Area Department OF OBSTETRICS AND GYNÆCOLOGY. (100 Beds.) Applications invited from registered medical practitioners for resident post of HOUSE SURGEON. Post vacant. The appointment, recognised for M.R.C.O.G., is for 1 year, with 6 months' gynæcology at Royal Berkshire Hospital, and 6 months in Maternity Unit at Battle Hospital.

Write, stating age, qualifications with dates, nationality and present post, with copy of recent testimonial, to Secretary, Royal Berkshire Hospital, Reading.

READING. ROYAL BERKSHIRE HOSPITAL. (339 Beds.) Applications are invited from registered medical practitioners (Male or Female) for the post of RESIDENT SENIOR HOUSE OFFICER (anæsthetics). Vacant 1st May, 1958, for a period of 1 year. Post recognised for F.F.A. R.C.S.

Write, stating age, qualifications with dates, nationality and present post, together with names of 3 referees, to Group Secretary, Reading and District Hospital Management Committee, 3, Craven-road, Reading.

READING. ROYAL BERKSHIRE HOSPITAL. (397 Beds.) Applications are invited from registered and provisionally registered medical practitioners for resident post of HOUSE SURGEON, vacant now, and tenable for 6 months.

Write, stating age, qualifications with dates, nationality, present post, with copies of 2 recent testimonials, to Secretary, Royal Berkshire Hospital, Reading.

ROMFORD, ESSEX. OLDCHURCH HOSPITAL. (722 Beds.) RESIDENT HOUSE SURGEON required from 3rd June, 1958, in the Obstetric and Gynæcological Unit consisting of 96 obstetric beds and 52 gynæcological beds. Post is approved for pre-registration purposes and recognised for D.Obst.R.C.O.G. and M.R.C.O.G.

Applications should be forwarded to the Group Secretary, Romford Hospital Management Committee, at the Hospital as soon as possible.

ROMFORD, ESSEX. OLDCHURCH HOSPITAL. (722 Beds.) SENIOR HOUSE OFFICER required from 3rd June, 1958, in the Obstetric and Gynæcological Unit consisting of 96 obstetric and 52 gynæcological beds. Post recognised for the D.Obst.R.C.O.G. and M.R.C.O.G.

Applications should be addressed to the Secretary, Romford Group Hospital Management Committee, at the Hospital as soon as possible.

ROMFORD, ESSEX. OLDCHURCH HOSPITAL. (722 Beds.) RESIDENT PÆDIATRIC HOUSE PHYSICIAN (Male or Female) required from 4th June, 1958. The Department includes a Premature Baby Unit of 9 cots and 50 children's medical beds.

Applications should be addressed to the Secretary, Romford Group Hospital Management Committee, at the Hospital as soon as possible.

ROMFORD, ESSEX. OLDCHURCH HOSPITAL. (722 Beds.) ORTHOPÆDIC HOUSE SURGEON (resident) required in the Orthopædic and Accident Unit from 26th May, 1958. The service consists of 100 Beds equally divided between traumatic surgery and "cold" orthopædics. Post is recognised for pre-registration purposes and for F.R.C.S.

Applications to be sent to Group Secretary, Romford Hospital Management Committee, Oldchurch Hospital, as soon as possible.

ROMFORD, ESSEX. OLDCHURCH HOSPITAL. (722 Beds.) SENIOR HOUSE OFFICER (neurosurgery) required from 21st June, 1958. Suitable for candidates seeking higher medical or surgical qualifications. Recognised for the F.R.C.S. (Eng.).

Apply to Secretary, Romford Group Hospital Management Committee, Oldchurch Hospital, Romford, as soon as possible.

ROMFORD, ESSEX. VICTORIA HOSPITAL. (99 Beds.) RESIDENT HOUSE SURGEON (Male) required immediately. Not pre-registration appointment.

Applications should be forwarded to the Secretary, Romford Group Hospital Management Committee, Oldchurch Hospital, Romford.

ROCHDALE AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. HOUSE OFFICER (surgery) required immediately for busy Surgical Unit. Post recognised for F.R.C.S. qualification and offering excellent experience.

Apply at once to Group Secretary, Central Offices, Birch Hill Hospital, Rochdale, Lancs.

RYDE, I.W. ROYAL I.W. COUNTY HOSPITAL. Senior HOUSE OFFICER required as Assistant Casualty/Orthopædic Officer for approximately 4 months from 11th May.

Applications, with names of 2 referees, to Hospital Secretary by 29th April, 1958.

SALISBURY GENERAL HOSPITAL. Temporary CASUALTY OFFICER (Senior House Officer) required from 1st June to 18th August, 1958.

Applications, with names and addresses of 2 referees, to Group Secretary, Salisbury Group Hospital Management Committee, Odstock Hospital, Salisbury.

SCOTLAND. EASTERN REGIONAL HOSPITAL BOARD. Dundee and Angus Area. Geriatrics. Applications are invited for the post of SENIOR REGISTRAR in the Geriatric Service for Dundee and Angus. The post is based at Maryfield Hospital, Dundee, a general teaching hospital of 370 Beds associated with the University of St. Andrews. Salary and conditions of service in accordance with national agreement.

Further particulars and forms of application from the Secretary to the Board, 430, Blackness-road, Dundee, with whom applications must be lodged not later than 3rd May, 1958.

SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD. Applications are invited for the following appointments, which will be for 1 year in the first instance:—

SENIOR REGISTRAR in Obstetrics and Gynæcology based at Stobhill Hospital, Glasgow.

REGISTRAR in Infectious Diseases based at Ruchill Hospital, Glasgow.

Applications (12 copies), stating date of birth, qualifications, experience, present appointment, and the names of 3 referees, to reach the Secretary, Western Regional Hospital Board, 64, West Regent-street, Glasgow, C.2, by 10th May, 1958.

SHEFFIELD. CITY GENERAL HOSPITAL. (658 Beds.) Recognised for F.F.A. R.C.S.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT OR NON-RESIDENT REGISTRAR (anæsthetics) required 1st July. Successful candidate to reside at the Hospital when on call. This is a large general Hospital with a Department of Thoracic Surgery, a regional cardiological centre and a professorial gynæcological unit. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 5th May, 1958, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

SHEFFIELD. THE UNITED SHEFFIELD HOSPITALS. Applications invited for the post of RESIDENT REGISTRAR or SENIOR HOUSE OFFICER at the Children's/Jessop Hospital, in association with the Department of Child Health in the University of Sheffield. The post is a rotating one between the 2 hospitals, alternating with another Registrar, so that the successful candidate will spend half his time in charge of the newborn babies at the Jessop Hospital and half in the Professorial Department at the Children's Hospital. Post vacant 12th June.

Applications, stating age, qualifications and experience, with the names of 3 referees, to be sent to the Chief Administrative Officer, United Sheffield Hospitals, West-street, Sheffield, 1, not later than 30th April, 1958.

SHEFFIELD. THE UNITED SHEFFIELD HOSPITALS AND THE SHEFFIELD REGIONAL HOSPITAL BOARD. Applications invited for 2 posts of SENIOR REGISTRAR in Clinical Pathology. Possession of a higher qualification desirable but not essential. Appointments for 1 year in the first instance and reviewed annually. The appointments, if extended for the full period, will be divided, subject to satisfactory work and progress, between the United Sheffield Hospitals and a hospital in the area of the Sheffield Regional Hospital Board (at present the Derbyshire Royal Infirmary).

Applications, stating age, qualifications and experience, with the names of 3 referees, should be sent not later than 30th April, 1958, to the Chief Administrative Officer, The United Sheffield Hospitals, West-street, Sheffield, 1.

SHEFFIELD. THE UNITED SHEFFIELD HOSPITALS. ROYAL HOSPITAL. Applications invited for the post of RESIDENT SENIOR HOUSE OFFICER in Clinical Pathology. Pathological experience not essential, but candidates must have previous clinical experience. The successful candidate will work in turn in the different branches of clinical pathology in the laboratories of the United Sheffield Hospitals.

Applications, with the names of 3 referees or copy testimonials, should be sent to the Superintendent, Royal Hospital, West-street, Sheffield, 1, immediately.

SOUTHAMPTON CHEST HOSPITAL. Locum Surgical REGISTRAR required for the Thoracic Surgical Unit (including Cardiac Department) of the above Hospital. No previous experience of thoracic work necessary.

Applications to be sent to Group Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton, immediately.

SOUTHAMPTON. ROYAL SOUTH HANTS HOSPITAL. (24 Beds. Recognised for F.R.C.S.) SENIOR HOUSE OFFICER (orthopædics) AND ORTHOPÆDIC HOUSE SURGEON (post recognised for pre-registration service and tenable for 6 months). The Hospital is the centre to which all trauma from a large industrial town and port is directed, thus providing excellent experience in the treatment of traumatic conditions; patients with orthopædic conditions are drawn from a wide area.

Applications, with copies of testimonials, should be sent as soon as possible to the Group Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

SHREWSBURY. ROYAL SALOP INFIRMARY/COPTHORNE HOSPITAL. (500 Beds.) HOUSE SURGEON. Vacant now. Pre-registration candidates eligible. Recognised for the F.R.C.S.

Applications, with copy testimonials, to Group Secretary, Shrewsbury Hospital Group, Royal Salop Infirmary, Shrewsbury.

SHREWSBURY. ROYAL SALOP INFIRMARY/COPTHORNE HOSPITAL. (500 Beds.) HOUSE SURGEON. Vacant 1st May, 1958. Pre-registration candidates eligible. Recognised for the F.R.C.S.

Applications, with copy testimonials, to Group Secretary, Shrewsbury Hospital Group, Royal Salop Infirmary, Shrewsbury.

SKIPTON (near). GRASSINGTON HOSPITAL. (208 Beds.) JUNIOR HOSPITAL MEDICAL OFFICER required for the above Hospital, which provides treatment for tuberculous patients, men and women. Accommodation available for single applicants.

Applications to Medical Superintendent.

SLOUGH, BUCKINGHAMSHIRE. UPTON HOSPITAL. HOUSE OFFICER required in Department of Obstetrics and Gynæcology to work with part-time Registrar. Post not recognised for D.Obst.R.C.O.G.

Applications, with names of 2 referees, to Secretary.

SOUTHEND. GENERAL HOSPITAL. (262 Beds.) Applications are invited for 2 posts of HOUSE PHYSICIAN (pre-registration), vacant 1st and 16th June, 1958.

Applications, stating age, qualifications, experience, &c., together with copies of recent testimonials, should reach the undersigned at the hospital by 1st May, 1958.

J. C. FIELD, Secretary.

SOUTHEND. GENERAL HOSPITAL. (262 Beds.) Applications are invited from registered or provisionally registered practitioners for 2 posts as RESIDENT HOUSE SURGEON. 1 post now vacant; second post vacant 4th June, 1958.

Applications, stating age, qualifications and previous experience, with copies of recent testimonials (1 testimonial sufficient from applicants for first appointment), should reach the undersigned by 1st May, 1958. J. C. FIELD, Secretary.

SOUTHPORT PROMENADE HOSPITAL. (214 Beds.) SENIOR HOUSE OFFICER (Physician), resident. Post vacant June.

Apply, stating age, experience, qualifications, nationality, and enclosing copies of 2 recent testimonials, to Group Secretary, Southport and District Hospital Management Committee, Promenade Hospital, Southport.

SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD requires Temporary Part-time JUNIOR HOSPITAL MEDICAL OFFICER (4 days per week—Monday to Thursday inclusive) for the Blood Transfusion Service of the South West and South East Metropolitan Regions. Duties to accompany Blood Taking Teams based on Maidstone and operating in Kent. Required for a minimum period of 3 months. Remuneration Junior Hospital Medical Officer. Scale pro rata.

Apply immediately giving date of birth, qualifications, experience, and names of 3 referees, to the Medical Director, South London Blood Supply Depot, Stanley-road, Sutton, Surrey, from whom further particulars may be obtained.

ST. ALBANS CITY HOSPITAL, St. Albans, Hertfordshire. (384 Beds.) Locum Tenens SURGICAL REGISTRAR, resident, required for 1 of the 2 surgical teams from 17th to 25th May, 1958, inclusive.

Applications to Secretary, Mid-Herts Group Hospital Management Committee, Bleak House, Catherine-street, St. Albans, Hertfordshire.

STOCKPORT AND BUXTON HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of SENIOR HOUSE OFFICER (anæsthetics) with duties at Stepping Hill Hospital, Stockport (529 Beds), and Stockport Infirmary (163 Beds). The post is recognised for the D.A. and F.F.A. R.C.S., and there are ample opportunities for study.

Applications, stating age, experience and qualifications, together with copies of 2 testimonials, to be addressed to the Secretary, Stockport and Buxton Hospital Management Committee, 59B, Shaw-heath, Stockport.

STOCKPORT. STEPPING HILL HOSPITAL. (529 Beds.) Applications are invited for the post of SENIOR HOUSE OFFICER (pædiatrics). The post, which may be either resident or non-resident, becomes vacant on 1st June, 1958.

Applications, stating age, qualifications and experience, together with copies of 2 testimonials, to be addressed to the Secretary, Stockport and Buxton Hospital Management Committee, 59B, Shaw-heath, Stockport.

STOKE-ON-TRENT. CITY GENERAL HOSPITAL. SENIOR HOUSE OFFICER (obstetrics and gynæcology) required. Post vacant during May. Recognised D.Obst.R.C.O.G.

Detailed applications to Hospital Secretary as soon as possible.

STOKE-ON-TRENT. NORTH STAFFORDSHIRE ROYAL INFIRMARY. HOUSE OFFICER (general surgery) required. Recognised for F.R.C.S. Post vacant very shortly.

Detailed applications, with copy testimonials, to Hospital Secretary, as soon as possible.

STOKE-ON-TRENT. NORTH STAFFORDSHIRE ROYAL INFIRMARY. SENIOR HOUSE OFFICER (anæsthetics) required. Post recognised for F.F.A. R.C.S. and D.A. Medical library facilities available.

Detailed applications to Hospital Secretary as soon as possible.

TAPLOW, near MAIDENHEAD. CANADIAN RED CROSS MEMORIAL HOSPITAL. REGISTRAR required to the Special Unit for Research in Juvenile Rheumatism. Post offers scope for those interested in research, pædiatrics, rheumatology or cardiology.

Application forms from and returnable to Secretary, Windsor Hospital Management Committee, Alma-road, Windsor, by 30th April.

TAPLOW, near MAIDENHEAD. CANADIAN RED CROSS MEMORIAL HOSPITAL. HOUSE SURGEON required for post vacant immediately. Pre-registration post.

Applications, stating age, qualifications, with dates, with copies of 2 testimonials, to Secretary.

TUNBRIDGE WELLS (near). PEMBURY HOSPITAL, PEMBURY. Applications invited for appointment of SENIOR ORTHOPÆDIC HOUSE SURGEON AND CASUALTY OFFICER (Senior House Officer grade) to begin duties as soon as possible. Recognised F.R.C.S. (Eng.) and tenable for 1 year. Work includes treatment of long- and short-stay cases and traumatic surgery with large Outpatient and Fracture Clinics under 2 Consultants.

Apply, stating age, qualifications and experience, together with 3 testimonials, to Group Secretary, Sherwood Park, Pembury-road, Tunbridge Wells.

WARWICK (near). KING EDWARD VII MEMORIAL CHEST HOSPITAL. (Diseases of the chest. 228 Beds.) SENIOR HOUSE OFFICER, resident preferable. Hospital is modern with Thoracic Surgery Unit.

Applications to Medical Superintendent.

WATFORD. SHRODELLS HOSPITAL. (General Hospital. 320 Beds.) Applications are invited for the post of HOUSE PHYSICIAN (pre- or post-registration), to take up duty in the middle of May.

Applications, with copies of 2 recent testimonials, should reach the Medical Officer-in-Charge as soon as possible.

WELSH REGIONAL HOSPITAL BOARD. Registrar (plastic surgery), St. Lawrence Hospital, Chepstow (182 Beds). Expected to visit other hospitals in South Wales area. Considerable opportunities for training in specialty. Accommodation for single person. Subject to review end of first year.

Application forms from Senior Administrative Medical Officer, Temple of Peace, Cathays Park, Cardiff, within 14 days.

WESTCLIFF HOSPITAL, Balmoral-road, Westcliff-on-Sea, ESSEX. Applications are invited for the post of RESIDENT MEDICAL OFFICER (Senior House Officer grade). Post vacant 1st June, 1958. The Hospital covers a wide field of medicine and offers excellent training for general practice.

Applications should be sent to the Secretary, General Hospital, Prittlewell Chase, Southend-on-Sea, Essex, not later than 1st May, 1958.

WEYMOUTH AND DISTRICT HOSPITAL. (124 Beds.) HOUSE SURGEON (Male or Female) required for resident pre-registration post. Recognised for F.R.C.S. examination and tenable for 6 months.

Applications, stating age, qualifications, together with copy testimonials, to Group Secretary, West Dorset Hospital Management Committee, Damers-road, Dorchester, Dorset, immediately.

WEYMOUTH AND DISTRICT HOSPITAL. Locum MEDICAL REGISTRAR (Registrar grade) (Male or Female) required from 1st May. Salary £19 5s. per week. Residence available if necessary.

Applications, stating age, qualifications, experience and enclosing copy testimonials, to Group Secretary, West Dorset Hospital Management Committee, Damers-road, Dorchester, Dorset, immediately.

WINCHESTER. ROYAL HAMPSHIRE COUNTY HOSPITAL. (327 Beds.) HOUSE SURGEON to the Senior Surgeon. Post vacant immediately.

Applications, with copies of 2 testimonials, to the Group Secretary.

WINCHESTER. ROYAL HAMPSHIRE COUNTY HOSPITAL. (327 Beds.) HOUSE SURGEON (post recognised by Royal College of Surgeons) required for general surgery with some E.N.T. duties. Approved pre-registration post. Vacant immediately.

Applications, with copies of 2 testimonials, to Group Secretary.

WINCHESTER. ROYAL HAMPSHIRE COUNTY HOSPITAL. WINCHESTER GROUP HOSPITAL MANAGEMENT COMMITTEE. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. REGISTRAR in Surgery (Registrar grade) required at the above Hospital. Vacant middle of May. The Hospital is recognised for the F.R.C.S. There is also a Senior Surgical Registrar in the Hospital.

Forms of application obtainable from Group Secretary, at the Hospital.

WINCHESTER. ROYAL HAMPSHIRE COUNTY HOSPITAL. (327 Beds.) HOUSE PHYSICIAN (obstetrics) required. Post recognised D.Obst.R.C.O.G. Vacant 30th May.

Applications, with copies of 2 testimonials, to the Group Secretary.

WOLVERHAMPTON. NEW CROSS HOSPITAL. Senior HOUSE OFFICER required as sole resident for 45 obstetric beds. Post recognised for D.Obst.R.C.O.G. Married quarters available.

Applications to Secretary.

WORCESTER. RONKSWOOD HOSPITAL. (312 Beds.) SENIOR HOUSE OFFICER (surgical) required immediately at this busy general hospital, which is associated with Worcester Royal Infirmary. The appointment offers wide and varied experience and is recognised for the F.R.C.S. examination.

Applications to Hospital Secretary.

WINDSOR. KING EDWARD VII HOSPITAL. House SURGEON in General and Orthopædic Surgery required, Male or Female, for post vacant 29th May. Recognised for F.R.C.S. Pre-registration post.

Applications, stating age, nationality qualifications with dates, and copies of recent testimonials, to Secretary.

WINDSOR. KING EDWARD VII HOSPITAL. Registrar (Casualty Officer), resident, required immediately. There is an Accident Unit of 30 Beds at the Hospital and with the Casualty Department forms part of the Accident Service for the Windsor Group and includes duties with the E.N.T. and Eye Departments. Candidates should have had previous experience in the treatment of acute injuries.

Application forms from and returnable to Secretary, Windsor Group Hospital Management Committee, Alma-road, Windsor.

WORKINGTON INFIRMARY, Cumberland. (150 Beds.) HOUSE OFFICER or SENIOR HOUSE OFFICER for orthopædic, surgical and casualty duties. Vacant now.

Detailed applications, with dates, and names of 2 referees, to the Group Secretary.

WORKINGTON INFIRMARY, Cumberland. (150 Beds, pre-registration post.) HOUSE PHYSICIAN (first, second or Senior House Officer post). Vacant now.

Detailed applications with dates, and names of 2 referees, to Group Secretary.

CANADA. ST. PAUL'S HOSPITAL, Vancouver, British COLUMBIA, CANADA. Applications are invited for 1 year JUNIOR ROTATING INTERNESHIPS at approved large general hospital. Remuneration $175 per month.

Apply Sister Superior, St. Paul's Hospital, 1081 Burrard-street, Vancouver, B.C., Canada. Canadian, American or British graduates only are acceptable.

IBADAN, NIGERIA. UNIVERSITY COLLEGE HOSPITAL. Pre-registration HOUSE OFFICERS. Post-registration HOUSE OFFICERS. The Board of Management invites applications from Nigerian graduates for vacancies on 1st August, 1958, for House Officers in the newly-completed Teaching Hospital.

Pre-registration candidates must be provisionally registered medical practitioners and should be prepared to serve in any of the following departments: medicine, surgery, obstetrics, and pædiatrics.

Post-registration candidates must be fully registered medical practitioners and should be prepared to serve in any of the following departments: medical, surgery, obstetrics, pædiatrics, anæsthetics and general outpatients.

The appointments will be for 1 tour of 12 months, 6 months to be spent in each of 2 departments, as far as possible, in accordance with the candidates' preference.

The salaries offered for the posts are:

Pre-registration House Officer—£660 p.a.

Post-registration House Officer—£1068 p.a.

In addition, a post-registration House Officer will receive a gratuity, on satisfactory completion of contract, of £37 10s. for each completed term of 3 months' service.

An outfit allowance of £60 is payable on first appointment. Partly furnished quarters are provided at a rental of 8½% of salary. Leave is granted at the rate of 5 days for each completed month of service.

Free first-class passage to Nigeria will be arranged, if not provided by any other authority.

Application should be submitted to the Adviser on Staff Recruitment, London Office, University College Hospital, Ibadan, 57, Catherine-place, London, S.W.1, from whom the appropriate forms and additional information can be obtained. The closing date for applications is 10th May, 1958.

MICHIGAN, U.S.A. OAKWOOD HOSPITAL, Dearborn, MICHIGAN. Applications are invited for 1 year approved ROTATING INTERNSHIP beginning 1st July, 1958. 234-Bed General Hospital 10 miles from Detroit. Excellent facilities. Hospital approved for exchange-visitor programme. Salary $200 if single, $250 if married. Housing rent-free.

Apply Director.

U.S.A. BRIDGEPORT HOSPITAL, Bridgeport, Connecticut. Approved ROTATING INTERNSHIPS and RESIDENCIES available in a general hospital of 387 Beds and 60 Bassinets. Stipend of $190 per month in addition to full maintenance and uniforms. Exchange Visitor Program participant.

Address inquiries to: Chairman, Committee on Medical Education, Bridgeport Hospital, Bridgeport 10, Connecticut, U.S.A.

U.S.A. UNIVERSITY OF MINNESOTA MEDICAL CENTER. ANESTHESIOLOGY RESIDENCIES at the above Center. 2 or 3-year programme with clinical and didactic instruction in all phases of anæsthesia. Board approval. Positions starting every month.

Address, F. H. VANBERGEN, M.D., University of Minnesota Medical Center, Minneapolis 14, Minnesota.

Public Appointments

CIVIL SERVICE COMMISSION. Psychologists. Pensionable posts in Admiralty (1—man only), Ministry of Labour and National Service (1), Air Ministry (1), Prison Commission (4—men only) for candidates aged 21 and under 31 on 1st August, 1958, with prescribed professional qualifications or experience in psychology. Final-year students may apply. Starting salary (men in London) £595–£945. Maximum £1250. Promotion prospects.

Write Civil Service Commission, Burlington-gardens, London, W.1, for details and application form, quoting 75/58/11. Closing date 15th May, 1958.

DURHAM COUNTY COUNCIL. Health Department. ASSISTANT MATERNITY AND CHILD WELFARE MEDICAL OFFICER. Applications are invited from registered medical practitioners (female). Commencing salary £1050 p.a. rising by annual increments of £50 and £55 to £1475. Travelling expenses will be paid in accordance with the scale approved by the Whitley Council.

The appointment is subject to certain conditions, particulars of which may be obtained from the County Medical Officer of Health, Shire Hall, Durham, to whom applications, together with the names of not more than 3 referees should be sent not later than 30th April, 1958. Canvassing members of the Council is prohibited.

J. K. HOPE, Clerk of the County Council.

FACTORY DOCTORS. Factories Acts 1937 and 1948. The following appointments as Appointed Factory Doctor are vacant. Apply to Chief Inspector of Factories, 19, St. James's-square, London, S.W.1.

District	*County*	*Latest date for receipt of applications*
BECKENHAM	KENT	10TH MAY, 1958
HONITON	DEVON	10TH MAY, 1958
STROUD	GLOUCESTER	10TH MAY, 1958
NORTH TAWTON	DEVON	10TH MAY, 1958
OKEHAMPTON	DEVON	10TH MAY, 1958
ARBROATH	ANGUS	10TH MAY, 1958

BUCKINGHAMSHIRE COUNTY COUNCIL. Applications are invited from registered medical practitioners for the appointment of ASSISTANT COUNTY MEDICAL OFFICER in the South Bucks Area. Preference will be given to applicants possessing a Diploma in Public Health or a Diploma in Child Health, and experience in maternity, school medical and child welfare work. Salary within the scale £1050–£1475 p.a., the commencing salary being fixed according to qualifications and experience. Travelling and subsistence allowances on the County Council's scale will be paid. The appointment is superannuable and subject to medical examination.

Further particulars and forms of application may be obtained from the County Medical Officer, County Offices, Aylesbury, to whom completed applications must be returned by Monday, 5th May, 1958.

R. E. MILLARD, Clerk of the Bucks County Council.

County Hall, Aylesbury.

MANCHESTER EDUCATION COMMITTEE. Medical OFFICERS are required for work in the School Health Service. Salary £1050–£1475. Preference given to candidates with experience in children's diseases and retinoscopy and holding D.P.H. or D.C.H.

Application forms and particulars (stamped addressed envelope) from Chief Education Officer, P.O. Box 480, Manchester 3, returnable to the Town Clerk, Town Hall, Manchester 2, by 3rd May, 1958. Envelope to be endorsed "School Health Medical Officer."

GHANA. TEMA DEVELOPMENT CORPORATION. Applications are invited for the post of MEDICAL OFFICER OF HEALTH on contract for 1 tour of 18–24 months with possible extensions.

Salary scale: £1380–£50–£1580; £1660–£60–£2080; £2280–£60–£2400 (consolidated) for Overseas Officers or £1080–£40–£1240; £1300–£50–£1650; £1840–£50–£1940 (consolidated) for African Officers.

Candidates will be required to join the Corporation's provident fund by making a contribution of 7½% of salary to it against the Corporation's contribution of 17½%.

Qualifications: Candidates must have a medical degree recognised by the General Medical Council in the United Kingdom and a Diploma in Public Health. A Diploma in Tropical Medicine and Hygiene and experience in public-health work and clinical medicine in the tropics would be an advantage.

Duties: The Medical Officer of Health will be responsible for the public-health aspect of the development of Tema Township, Tema Harbour, and ancillary constructional projects.

For application forms write, stating age, qualifications and experience to the Director of Recruitment (overseas), Ghana High Commissioner's Office, 13, Belgrave-square, London, S.W.1. Closing date for applications 30th May, 1958.

NEW SOUTH WALES DEPARTMENT OF PUBLIC HEALTH. NEUROSURGEON (Junior), Cerebral Surgery and Research Unit, Callan Park Mental Hospital, Sydney, New South Wales. Applications are invited for the above position. Salary: £A2562 p.a. Graduate of at least 5 years' standing with experience in neurosurgical procedures in a recognised neurosurgical unit. To be responsible for operative techniques to Senior Honorary Neurosurgeon and competent to perform routine operative procedures without supervision. Required to supervise postoperative course in surgical patients, assist with specialised neuroradiological procedures (air studies, arteriograms, &c.). Employment is under the Public Service Board of New South Wales with rights as to permanency, superannuation, &c., at the conclusion of a satisfactory probationary period. First-class ship fares to Sydney of the appointee and his family will be paid.

Applications (4 copies) (including 1 copy of a recent photograph and the names of 2 referees) should be lodged with the Agent General for New South Wales, 56, Strand, London, W.C.2 (from whom further particulars about the position may be obtained) by 9th May, 1958.

THE NIGERIAN RAILWAY CORPORATION invites applications for the post of MEDICAL OFFICER.

Duties: A Medical Officer will be required to work at a Railway District Hospital and/or Dispensary and to be responsible to the District Medical Officer for the medical and surgical care of the staff of the Corporation and their families, with such administrative and public-health duties as pertain to effective railway working.

Qualifications: Candidates must be registrable in Great Britain with good clinical experience. Additional postgraduate specialist qualifications and/or medical administrative experience will be considered an advantage but not essential.

Salary: In scale £1875–£50 p.a.–£2075 (inclusive of overseas pay). Starting salary according to qualifications and experience. Appointments may be on pensionable terms or on contract with a gratuity payable on completion of contract at the rate of £31 5s.–£34 11s. 8d. for each completed month of service.

Tours: 15 months in Nigeria followed by 15 weeks' leave on full pay.

Quarters: Partly furnished quarters are provided at low rental.

Allowances: There are attractive family, travelling, transport and other allowances.

Send postcard before 13th May, 1958, mentioning the post and this paper, for further particulars and application form to The London Representative, Nigerian Railway Corporation, Nigeria House, 9, Northumberland-avenue, London, W.C.2.

LIVERPOOL. CITY OF LIVERPOOL. Port Health AUTHORITY. Applications are invited from registered medical practitioners for the appointment of SENIOR ASSISTANT PORT MEDICAL OFFICER. Salary £1520–£50–£55 (7)–£1955 p.a., according to qualifications and experience. The duties will include the tidal inspection of vessels, the medical inspection of aliens, and such other duties as may from time to time be assigned to him by the Medical Officer of Health. Applicants should hold a Diploma in Public Health and have experience in port health work. The person appointed will be required to devote whole-time service to the duties specified, and must reside within the City. The appointment is superannuable and subject to the Standing Orders of the City Council.

Application forms (returnable by 10th May, 1958) are obtainable from the Medical Officer of Health, Health Department, Hatton Garden, Liverpool, 3. Canvassing disqualifies.

THOMAS ALKER,

(J.5137) Town Clerk and Clerk to the Port Health Authority.

General Practice

For an Executive Council post (England and Wales) apply on form E.C.16A obtainable from the council. Mark envelope "Vacancy."

BLACKPOOL. Applications invited for Vacancy. Urban. List at present approximately 1600. Residence and surgery available. Apply on E.C.16A before 3rd May, 1958, to—

G. CLAYTON, Clerk, Blackpool Executive Council.

Martins Bank Chambers, Clifton-street, Blackpool.

READING EXECUTIVE COUNCIL. Applications are invited for VACANCY in western area of borough. Classification: Intermediate. List as at 1st April, 1958—1361, including county patients. Residence and surgery available subject to negotiation with owner. Applications on Form E.C.16A to be received by the undersigned not later than 5th May, 1958.

N. W. AUSTIN, Clerk of the Council.

10, Gun-street, Reading, Berks.

SALFORD (Higher Broughton, Lancashire). Retirement VACANCY (30th June, 1958). Intermediate Area—Urban. Doctor transferring to the Hospital Service. List (1st January, 1958) 1618. Residence, including surgery, available for sale to successor. Applications of Form E.C.16A to reach undersigned not later than 10th May, 1958.

J. S. G. CLOUGH, F.C.I.I., Clerk, Salford Executive Council.

Irwell-place, Crescent, Salford, 5.

Required, Trainee Assistant rural group practice. Cottage Hospital.—Apply, Surgery, Alford, Lincs.

Miscellaneous

Imperial Chemical Industries Limited has a Departmental vacancy of a senior nature for a qualified Medical Practitioner in connection with the development of pharmaceutical products at home and overseas. Experience of clinical medicine both in hospital and general practice is essential. Salary would be in accordance with qualifications and experience and applicants should be under 35 years of age.—Applications, with full particulars, should be addressed to the Staff Manager, IMPERIAL CHEMICAL INDUSTRIES LIMITED, Pharmaceuticals Division, Fulshaw Hall, Wilmslow, Cheshire.

The Steel Company of Wales Limited wish to appoint an Assistant Medical Officer (Male) to their Margam Works at Port Talbot. Candidates, aged 26–34 years, should have good clinical background, including practical casualty experience and an interest in preventive medicine, but first-hand industrial experience is not essential. Appointment will be conditional on a successful medical examination. Commencing salary within the current B.M.A. range for whole-time Assistant Medical Officers in industry. Contributory pension scheme in operation.

Application forms should first be obtained from the Superintendent, Personnel Services, The Steel Company of Wales Ltd., Abbey Works, Port Talbot, Glam.

SURGEON

Large Oil Company requires a Surgeon for work in the Middle East. Applicants should be qualified medical practitioners and possess F.R.C.S. or equivalent higher qualification. The man selected will work under the general direction of the present Surgeon and will be required to conduct surgical outpatient clinics at Consultant level. He must be capable of taking full control of all the emergency surgical and obstetrical cases during his tours of emergency duty, which will normally be every other week. Service is on 3-year (renewable) contracts with pensionable pay not less than £1925 and substantial local currency allowances. Home leave with paid passages after 2 years. Fully furnished air-conditioned accommodation provided at nominal rental. Write in detail, quoting No. 810, to Box No. 1664, c/o Charles Barker & Sons, Ltd., Gateway House, London, E.C.4.

Required early July to middle August, Locum to take charge of consulting medical practice, mainly rheumatology. Harley-street.—Address, No. 393, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

Doctors requiring applications, theses copied: Write to MANTON (WESTMINSTER) LTD., 98, Victoria-street, S.W.1 (VIC. 0141), who are specialists.

"Pregnancy Diagnosis by the Xenopus Method," 24-hour service. Send specimens of urine and £2 2s. fee. Hæmatology, Biochemistry, Flame Photometry.—WELBECK BIOLOGICAL LABORATORIES, 26, Park-crescent, Portland-place, W.1 (MUSeum 5386–7).

Surgical instruments. Second-hand general set wanted. Address, No. 392, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

Microscopes. Highest prices paid for good modern types. Send or bring your equipment for valuation.—WALLACE HEATON LTD., 127, New Bond-street, W.1.

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Inability to take aspirin . . .

IT HAS BEEN reported (*Brit. med. J.*, 1: 444, 1957) that of 178 rheumatic patients, 25% could not take plain aspirin in adequate dosage.

Of this 25%, however, the great majority tolerated a modified aspirin such as Paynocil.

Not only are Paynocil tablets usually well tolerated by the stomach (even on the heavy dosage needed for rheumatoid arthritis), but they are extremely palatable, disintegrate instantly on the tongue without water, and cause no discomfort or unpleasant after-sensation.

. . . indicates PAYNOCIL

non-irritant, palatable, quick-dispersing aspirin

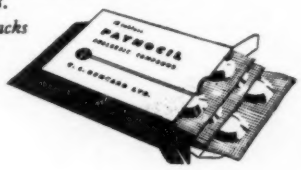
FOR ADULTS

PAYNOCIL

EACH TABLET CONTAINS

Acetylsalicylic acid ..... 10 grains
Aminoacetic acid..... 5 grains

PACKAGES in sealed foil strips:
Cartons of 18.
Dispensing packs of 240: basic N.H.S. cost (tax free) 21/8d.



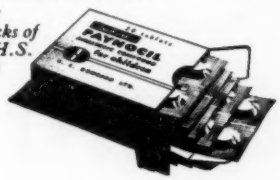
FOR CHILDREN

Junior PAYNOCIL

EACH TABLET CONTAINS

Acetylsalicylic acid ..... 2½ grains
Aminoacetic acid ..... 1½ grains

PACKAGES in sealed foil strips:
Cartons of 20.
Dispensing packs of 240: basic N.H.S. cost (tax free) 12/-.



Detailed recommendations for dosage in rheumatoid arthritis will be gladly supplied on request

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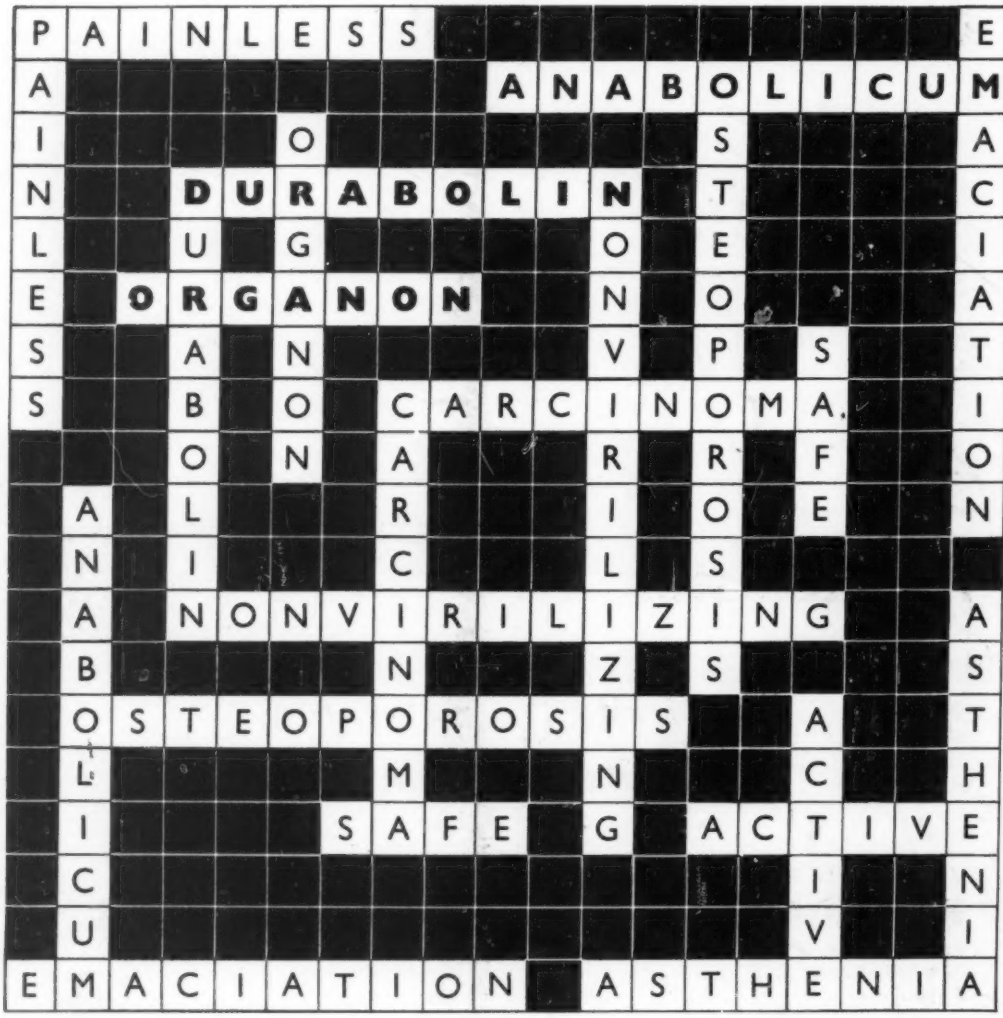

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the most powerful tissue-builder

One 25 mg. injection weekly